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APERS PRINTED FOR THE USE OF STUDENTS IN THE MASSACHUSETTS
STATE NORMAL ART SCHOOL.

POPULAR
NDUSTRIAL ART EDUCATION.

THE ANSWER TO A QUESTION,

THE PENNSYLVANIA MUSEUM AND SCHOOL OF INDUSTRIAL ART,
PHILADELPHIA, PENN.:

ow can this Institution best promote the Cause of Popular Industrial Art Education?"

BY

WALTER SMITH,

ART MASTER, LONDON, ENGLAND; DIRECTOR OF DRAWING IN BOSTON 1871 TO 1881;
PRINCIPAL OF THE NORMAL ART SCHOOL OF MASSACHUSETTS;
AND STATE DIRECTOR OF ART EDUCATION
IN MASSACHUSETTS.

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1882.

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To Past and Present Students of the Normal Art School.

One lesson I have frequently impressed upon the students of the Massachusetts Normal Art School in my addresses and writings; viz., that a good teacher will always prepare his lessons beforehand, and work upon a clearly defined plan, however much upon it the instruction may be broadened and varied in the class-room.

Under present circumstances it appears probable that the majority of the students now in the school who may in the future be intrusted with the charge of directing art education in cities and States, will be pioneers in the cause, whose chief task will be to formulate and administrate plans of instruction adapted to the surroundings in which they may be placed. Final success will depend upon the knowledge and practical wisdom displayed in this planning; and the experience of those who have gone before, and have attempted the same work, must be of interest and value. I have printed the paper called "Popular Industrial Art Education" in the form in which it appears, because it has been presented in that form as a practical answer to a practical question. The matter and the details have been delivered in the Normal Art School during the present year in the form of lectures. To preserve this normal instruction in a permanent form, it is now printed for the use of students and teachers.

One copy of each printed paper issued from the school may be obtained by a past or present student of the school on application in writing only, addressed to the Principal, Walter Smith. It is suggested that all such papers be preserved by the students for future use and reference when they become teachers.

Teachers of drawing in Massachusetts may also obtain one copy each by making a similar application.

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POPULAR INDUSTRIAL ART EDUCATION.

PAPER PREPARED AT THE REQUEST OF THE BOARD OF TRUSTEES OF THE PENNSYLVANIA MUSEUM AND SCHOOL OF INDUSTRIAL ART, AND ADDRESSED TO THEM, BY

WALTER SMITH.

INTRODUCTION.

THE subject upon which you have asked me to give you a thoughtful opinion, accompanied by practical suggestions in relation to it, is described in your own words as follows: "The Pennsylvania Museum and School of Industrial Art, Philadelphia, Penn.: How can this institution best promote the cause of popular industrial art education?"

The question is well put and significant, confining the subject of inquiry to that which the institution in Philadelphia, with its present and prospective opportunities and limitations, may be reasonably expected to undertake and accomplish; whilst the nature of the work to be done, viz., popular industrial art education, is defined clearly in the complete title.

THE SUBJECT.

I approach this subject with a certain degree of confidence, because I have given it careful study, and have necessarily had a long acquaintance with it in all its bearings, and I am conscious of a feeling of satisfaction that you should have considered me worthy of consultation.

The object you have in view is one of such importance that I realize fully how great is the responsibility which you have imposed upon me, and shall endeavor to fulfil your request with all the care and thought it may require.

The work you have asked me to do does not fall immediately in the line of my duty, and most people find their own business is occupation enough; but due consideration has convinced me that in this pioneer work you are entitled to the help of those who have had experience of past and present schemes of a similar nature, especially as the laborers and observers are few, and the desired results are vital to the well-being of society.

The agencies at your command, either in actual existence or capable of being brought into existence and further development, are a Museum and a School: the objective point in their administration being the promotion of education which is to be artistic, not general; industrial, not professional; popular, and not that of a class, or sectional.

Taking these two agencies as the means by which the results just defined are to be accomplished, we must first be satisfied that under ordinary circumstances they are adequate to the end proposed.

We should take into account not only the final results, but also the means at command, as well as those likely to become available.

It is in this twofold aspect of the end and means, that the project should be subjected to the most radical tests, for the end is a great one, and the question is, are the means adequate?

Museums and Schools, which are the symbols of wealth and life, of instruction and education, when properly administered in unison for purely public purposes, and with sufficient skill, are undoubtedly competent to do the work proposed by you; viz., to promote Popular industrial art education.

They have already been successful in that direction both in England and France, in varying degrees of success, proportioned to the wisdom and the resources with which they have been administered, but always successful.

In both of those countries the object to be accomplished by these agencies, with all the responsibilities thereby entailed, has been recognized as essentially public, and as a branch of political economics, to be sustained and nurtured from public resources, popularly, steadfastly, sufficiently, and permanently.

The wisest statesmen in both countries have cared for and have watched over the productivity of their respective peoples as affected by education and art, sagaciously recognizing that national fertility is encouraged by such important factors as art and science operating under favorable conditions, and that the culminating development of prolific industrial life, economical as well as national, is in the possession of knowledge, taste, and skill by every individual.

Museums and schools of art, so regarded and sustained, have proved eminently successful, and they will in all probability continue so, wherever they are similarly supported and conducted.

In governmental administration, in which your circumstances differ from those of the European States which have attempted and attained the results you seek, is to be discovered the only element of uncertainty in the required conditions of success, the only limitation to it in its highest form.

Though your aim be in the broadest and best sense of the words public and general, the organization and resources of your institution are not public in the same degree; whilst freedom from the control of a perpetually changing State government must be paid for by a proportionate curtailment of public authority, by a measurable lack of general interest, and the imposition of a disproportioned and unjust responsibility on individuals.

This statement is not made under the mistaken notion that I am giving you information which you do not already possess, but to point out to you beforehand an essential and radical difference between your circumstances and resources, as compared with your aims, and the more favorable conditions in other countries which have been invariably associated with success.

Nor would I be understood to mean that the administration and responsibility of a State government for such a school and museum as yours are necessary to success; for if that were my opinion, and knowing your circumstances, consistency would require me to decline assisting you on the road to failure. It is rather because I sympathize with your difficulties, and admire your courage, that I refer to this view of the subject; and I shall endeavor to point out how this difference may be turned to advantage, and the deficiency be compensated for by liberty of action. Difficulties, which, even if they hinder, do not discourage you, and obstacles and responsibilities which you are ready to meet and assume, may reasonably be held of little account to you, and therefore by me, — and I do so hold them.

Your action seems to import that you recognize a forward movement, such as you propose to continue and mature, must be initiated and supported by individuals, associations, and corporations, before its importance is recognized and its conduct is assumed by the public through its elected representatives; and this view is historically accurate.

There never has been, and probably never will be, a time in any nation's history in which the public action upon subjects of general interest has been supported by the people with unanimity.

There must be leaders and followers, majorities and minorities, under either republican, constitutional, or despotic governments; and the leaders whose talisman opens the door of the greatest good to the greatest number will ultimately be recognized as having the best right to govern in secular and mundane affairs, whatever may be the case in religious matters.

I put aside, therefore, as answered, the only radical question affecting the competency of your agents, a museum and a school, to accomplish your purposes, and now proceed to consider the nature and scope of your aims and object, as defined by the words, *Popular*, *Industrial*, *Art Education.*

Popular. — This conveys perhaps a more comprehensive meaning than the term *public* education; for there will hardly come a time when a certain amount of private education will not exist side by side with even the most general and the healthiest scheme of public education, though not included in the latter, whilst *popular* education includes with different degrees of activity that of all people, of all ages, of all conditions, and in all places, under one government. We start, therefore, with a definition of purpose which is broad enough.

Here, also, the necessity of associating a museum with a school becomes apparent; for society includes within its ranks those who are beyond the school age, but not past the museum stage in education, as well as those to whom, through their youth or ignorance, the contents of a museum are as a locked and sealed book until the education obtained in the school and class-room has unlocked its bolts and broken its seals.

This distinction pertains not only to the different ages of individuals, but is also characteristic of different stages of perception and development, morally, and intellectually also.

The processes of education, to be efficient and comprehensive popularly, must be adapted to the capacities of the people, whether young or old, rich or poor, refined or rude ; for there is as great a difference in the receptiveness and assimilative power of the same individual in childhood and maturity, as there is between the sensitiveness of the educated and the ignorant, or between the necessities of the wealthy and the poor.

The raw material of instruction, to be transformed into the vital influence of education by individuals, must be presented in different forms to diverse persons, or it cannot be accepted by them.

Even teaching must be adapted in its mode, as well as its subject, to the circumstances and attainments of pupils, and become either a lesson, a demonstration, or a lecture, to suit the mental machinery on its most sensitive and approachable side.

Popular education, therefore, recognizes the needs of all, whether distinguished by age, intelligence, social position, or occupation, and seeks to make provision not only for those who feel their deficiencies, and are intelligent enough to want help, but for those also who are unconscious of their needs.

The ability to provide the opportunities of education in industrial art, for so broad a constituency as the people, irrespective of age, sex, or rank, rests upon the union in one organization, and under one and the same administration, of the passive and active influences and forces represented by a Museum and a School.

Each of these agencies will have methods of instruction peculiar to itself, although if they work in harmony the dividing line between them will often be obliterated by action common to both, as in lectures and periodical exhibitions ; and this unity of purpose resulting from the necessity of co-operation for efficiency will divide the difficulties, whilst it doubles the forces available for educational progress.

You will see, therefore, that in this work of popular art education, both of the agencies at your command must participate, and the administration of the museum will be of equal importance with the organization of the school, but not more, the distinction between them being only that of mode.

For the first passively teaches by examples and through the display and preservation of eclectic records, which are as food for the present and seed for the future ; whilst the second actively instructs by the living teacher, developing the human faculties by educating them, and enabling the student to understand and grasp the principles which lie at the foundation of all art, whether utilitarian or purely ornamental, and also to acquire the skill for their perfect expression and noblest illustration.

The criterion, therefore, of the efficiency of both these educational forces, will be their ability to influence and serve the greatest number of the people in the highest form, and, if possible, to leave none unreached or unaffected, except by their own rejection of aid.

Should these agencies provide opportunities for improvement which otherwise do not exist, for such a broad and general purpose that it is important to individuals, to society, and to the nation at large, they will establish for the institution the right to describe itself and its work by the first word in our title; for it will undoubtedly be, and have the right to be entitled, popular, in the best sense.

How these conditions may be complied with, and these objects secured, I shall further illustrate in detail under the divisions, Museum and School.

Industrial. — This expression also, though in its connection it is used in a sense to distinguish one form of industry from another, is happily more comprehensive than would at first sight appear, and to that extent it is of more general importance.

Industry is the application directly from hand, eye, and brain, or indirectly through labor-saving inventions, of human force and skill, to provide for various human wants that "bread," whether material or spiritual, concerning which it was foretold, we should eat it only in the sweat of our physical or mental brows.

No free translation nor poetical rendering of language can explain away or becloud the edict, "If a man will not work, neither shall he eat;" and no conspiracy either of generations or individuals can shield them from a penalty which was intended to be, and ought to be, universal.

The application of this term "industrial" therefore includes all forms of labor requiring for their performance force or skill, of muscle or brain, to provide for human necessities.

Of labor there are many kinds; some consisting almost wholly of the employment of force alone, some of skill almost alone, and some of force and skill combined.

This may be illustrated in the building of a house.

The laborer who digs for the foundation, or carries the materials required in construction from one place to another, represents preponderating natural force, without much acquired skill; the architect who designs the house, and draws its plan, represents skill without much force; the artisans and mechanics who prepare the raw material of natural products for their constructive or ornamental uses, and combine them into the fabric of a house, represent the union, in their several degrees of proportion, of skill and force united.

This distinction illustrates types only, and it might be objected that there is no hard line of separation between the application of force, force and skill, and skill. The less there is, the better, especially when the tendency to assimilate is upwards and not downwards.

But the distinction exists, and affects our estimate of the value of labor, which, tested by the sensitive element of compensation, places force lowest, skill highest, and force and skill in combination midway between the two.

The sense of responsibility to provide a practical education for all three classes has not been felt in an equal degree towards all by society, though the free common-school system of the United States, and other countries where free schools are provided, is the nearest approximation yet made to a recognition of this responsibility.

In whatever country this free-school system exists, it is a source of national pride; and here, next to its form of government, the common schools justly hold a position nearest to the popular heart.

This is as it should be; for the government which most thoroughly represents and protects us all ought to stand first in our earthly regards. And then should come that other influence which is as general and potent in national life, — Education; fitting us both to govern well, and be governed well; whose strength and beauty make it the chief corner-stone in the fabric of liberty, the symbol of stability, and the expression of our faith and hope in the permanence of this home for a free people.

The national instinct therefore cherishes this corner-stone of common-school education, free for all, whilst it has not yet in this country been much exercised over the technical education of the many, or the professional education of the few; for reflecting men know that, should this first great sustaining power become weak or decadent, the temple of our liberties could not long be saved from danger and ruin.

But having provided and well and truly laid this radical part of the structure, the next step is its adornment by creations of skill and beauty, the keystone of technical education, the finial of art power.

For the same reason that common-school education appeals to the popular heart, and rouses national pride, both arising from the natural instinct of self-preservation, so in fashioning a development of it for industrial purposes we should endeavor to make progress upon the same safe lines.

The thought should be forever kept in mind, that this development will be just, in proportion as it administers to the needs of all; it will be practical, in the ratio of the numbers elevated by its influence; and it will be successful, in the precise degree in which we can make it available to all.

These are principles, which, if recognized by all, will make difficulties of administration disappear, and each subordinate detail take its place like a brick in an edifice, with no more trouble to place it, and having no greater and no less an influence on the structure than its position and importance confer upon it.

What is contemplated, therefore, is to take the second step in national education: the first being the intelligent direction of force, by general common-school education for all the people; the second stage being the continued development of force, but now associated with skill, or force and skill combined, in secondary or technical education; and there will doubtless come a halcyon time when it will be as manifestly the duty and glory of every great country and race to provide a suitable national education for skill alone, — skill in the arts of peace and goodwill, — as they now do in this pugnacious stage of our civilization provide national workshops, wherein the science of destroying human life and industry in war is systematically pursued at national expense.

Meanwhile, the first step towards this development of the divine faculties of creativeness in men should be in the direction of general skill and taste, based upon the doctrine which was proclaimed when the nation was born, that all men are created free and equal, and that the best and the highest which is good enough for one is good enough for all.

Whilst we may be grateful for unusual combinations of faculties in the few, we must proceed on the basis, that, all men being equal, we should give them equal opportunities to advance equally, and so make individuals themselves responsible for rising above or falling below a common standard, in which we aim at the highest.

In this there will be the safest and fairest embodiment of justice and, wisdom; and, if we doubt the policy of this view (I am sorry to use so disgraceful a word as "policy," but no other as nearly expresses the idea), there is the example of at least one high authority, who has been declared to be no respecter of persons.

Art. — The education to be developed by the institution is qualified also by the word "art," not as defining a specialty of social employment, but as an element or fibre of social life, like the filaments which together make the warp and weft in the fabric of society, as well as the means of a profitable life for many.

Civilization in its highest form means this, at least, — the extension of equal opportunities to all, that they may be productive and happy, economical of life, and glad to live.

Any thing less than that is provincialism.

This art element in education appears to me to be the intended means by which the human element in us will be developed.

It has been stated that God created man in His own image; and the human race does appear to be the only creation of His which has displayed a manifested love of the beautiful through creativeness of that which is original in individual work.

If this be so, it is quite worth while to recognize that the ascending plane and tendency of our race is in the direction of design and beautiful originality, for in that will be found the true image of the great Creator, and of our most exalted humanity.

Work of the body, stress of muscular fibre, we can find substitutes for in the employment of animal forces other than human, or in the discovery and harnessing of natural forces to do our bidding; and so we can hope eventually to abolish fatigue and time, or reduce their expenditure to yet unthought-of dimensions.

But this one sort of work, which consists of originality or designing, is impossible to other created beings besides men;

and we must assume therefore that it is the human image of God, existing like an echo of Deity in living men, their inherited birthright, which they cannot part with, nor communicate to others than their children.

This attainment or endowment of the human race is called Art.

It is the first instalment of our great human privileges, an introduction to the divine enjoyment of the beautiful, the consecrating element of labor, and compensation for its toil and mire.

It has been strongly impressed upon me, that there have been three distinct revelations of the Almighty to human creatures: the first, of life; the second, of labor; the third, appreciation of the beautiful; and the last, which has been promised us by our hopes and our fears, is immortality, of which it is not my business to speak.

Meanwhile we want the eyes of all men to be opened to the beautiful in nature, and their hands creative of the beautiful in art, for their highest happiness and usefulness, for their race and for themselves.

The influence which this study of art in its elements and initial processes is to have upon the character of a people has yet to be ascertained; for it has nowhere been pursued long enough, as an integral part of general public education, to determine what this effect will be.

Experiments persistently carried on in some communities, over a broad area, and with the gift of continuance, have, however, already demonstrated that the human race has been much underrated in the past by those who believed art appreciation and power to be uncommon as an attribute or a possible attainment of all human beings.

It remains for us to discover the value of a perception and appreciation of the beautiful, and its embodiment through skill in the work of our hands, as the common possession of all people, without distinction of race or class or creed.

The education in art of a few has not tested this fairly, being in its effects the same as that which resulted from the general education of a few, whilst the great masses of the people remained ignorant, to their great loss. The wide diffusion of general education in recent times has materially changed the character of society in all ranks, and we may reasonably expect a corresponding change, not of equal extent, but as universal in application, from the infusion into that general education of an element so potent and so human as the development of taste and skill through art and science.

It is something to have discovered that faculties which, through ignorance of mental anatomy, have been ignored or denied, because they have lain dormant, do really exist in all of us; and that the promised land of the beautiful, adorned by its unforbidden tree of knowledge, which invites us, is free for all who have both the faith and the will, to enter into and possess.

The first steps in this triumphal march have been taken wisely and firmly in some places; and the responsibility is now placed upon the directors and managers of institutions such as yours, which are in the van of educational progress, that their work shall be carried on upon a broad basis for the good of all; for then we shall begin to make history in art education, and not until then will it assume its true importance and right significance in the development of national character, nor display its power as a lever in the advancement of national prosperity.

Education. — We come at last to the noun, in relation to which the words "popular," "industrial," "art," were but adjectives.

Here at last is the temple, to which all we have previously considered are but the porches. Let us enter into it with reverence.

Education of future generations is the homage, directed by the past, which we pay to the future; and this we may render in full and with a generous margin, or as bankrupts and shirks, with the smallest percentage on our indebtedness. The education which a nation or race offers to its children measures its future hopes as well as its past history; and there is no more certain sign of the rising ascendency of a people than the care they bestow on their schools, nourishing and cherishing them as precious agents, making their maintenance and conduct the most responsible of duties.

No nation can be said to have reached its meridian so long as its schools are improving on past methods and with better results; none can be shielded from extinction if its education be on the down grade, or be frivolously regarded as unimportant.

The race which is perennially young is that which protects and guards its scions from ignorance and excess, developing in them, by education and example, a diligent, skilful, just, and fearless manhood.

In the changing conditions of society, resulting from inventions which continually affect values and occupations, it is impossible to accept the educational measures of a previous generation as necessarily fitting for that which succeeds it; and consequently, in any live and progressive community, the education given in public schools will be sensitive to the changing occupations of the people, both in the higher secondary schools and in all the grades of primary education.

This is a problem which every modern age and generation has to encounter; namely, how to make public education responsive to new demands upon it, so that in fact as well as in name it may lead the people, and not lag behind them, as it does sometimes, when the old lead, or the young counsel.

The problem has forced itself upon us in recent times more seriously than during any former period in our history; for no agency yet discovered ever so completely transformed the social condition and habits of a people, or created such original demands upon their capacities for service, as our invention of the steam-engine, and others which have followed and supplemented it, and their application as motive powers during the present century.

It is a problem which to-day is attracting serious attention in all civilized communities, and the best minds in our generation are employed in its solution. Wherever great social or even political changes have occurred, putting people out of joint with their surroundings, there the community will be found looking to education as the means of righting their difficulties, and leading them forward.

We are beginning to believe that the best educated nation is the most powerful, and are awakening to the perception that the most skilful peoples are the wealthiest, and most recuperative under stress.

Educational activity is therefore more pronounced now than it ever has been before; and, wherever we find that to be the case, we shall also find it taking the direction of a more general diffusion of the means for instruction in art and science among the producing classes.

This technical education of the masses is the missing link between the general elementary instruction in public schools, and the professional education of the wealthy classes in colleges and universities; and the first step towards making it possible is firmly to establish its elements as a part of all general education in public schools. That is going to the root of the matter, beginning *ab ovo;* and, though this may not be as interesting to the eye and ear of the public in its present understanding of the subject as the more advanced and direct results obtained in technical schools would be, yet its ultimate influence will be more comprehensive, successful, and even speedier, than any less radical measures can be.

The means to secure this may be found in the school which forms part of the institution you direct; but to derive so great a benefit from it requires from you the courage of being prepared to be misunderstood, and the tenacity of fixed purpose resulting from far-seeing perception, extending beyond the limited horizon of the immediate present, and into the glorious future.

Though I do not consider education is the monopoly of the school any more than it is of the museum, yet it is the active agent, the source of missionary influence which shall interpret the latter, and make its treasures germinate, and bear fruit in the future, even more abundantly than is possible at the present time; for the museum is but the granary, whilst the school is the husbandman.

It is for practical men to bear witness to you how this general conclusion may be carried out practically, so that if the premises be granted, and the consequences entailed by them follow, there shall be no hinderance between your purpose and its fulfilment.

This has been my interpretation of the task you have imposed upon me; and I have therefore devoted much time and care to such professional considerations connected with the school and instruction as I felt most qualified to speak about, and knew would be most useful to you.

For the question has not been whether a school and a museum *could* do the work contemplated by you, but rather what *kind* of a school, and what *sort* of a museum, could accomplish it, and *how*.

This must be my apology if you think I have gone into needless details, or offered fuller explanation than was necessary on what at first sight may appear to be minor points.

Generalizations are valuable when based on sufficient knowledge; but those are available on many sides. Special knowledge and experience in the work of practical education in these particular branches, with the advantage of having watched the development of this subject of instruction from the time it was first seriously taken up, until now, is not so common; and, because it has fallen to my lot to possess this experience, my answer to your inquiry will, naturally and properly, be chiefly of a practical character.

The subject as it unfolds itself to me is, therefore, comprehended in two divisions, — the museum and the school; and it will, I hope, be found practicable before long to have both of these departments of your institution under one roof, though that is not now the case: for each is incomplete without the bodily presence of the other, and both are stronger as a part of one household in domestic relationship.

As the first established, and standing first in my text, I shall speak first on the character and resources of the museum, and then more fully of the school, hoping it will be understood that I shall treat of both in relation to public needs; and my remarks must not be taken as criticisms upon what they now are, — a subject upon which, from want of practical acquaintance with both, I am not competent to speak, nor have I any desire to do so.

This is a position of some advantage to me at present, because it must absolve me entirely from suspicions of criticism, which would, under the circumstances, be not pertinent to the subject.

Watching the conduct and progress of classes and individual students during year after year of their progress and studies, I have naturally been made aware of the influence of certain subjects and modes of study on the development both of character and artistic power. I have seen many pupils pass through the public schools, from the lowest grades where drawing and design formed an insignificant part of the instruction, up to and through the graduating classes of a normal art school, where, for a period of four years or more, art study and practice formed the only occupation of the student.

Experience such as this has enabled me, not only to observe the effect of methods of instruction, but the relative value of the branches of study, and also the meaning of what is called natural aptitude or special gifts (and the alleged absence of such), and their value and influence on progress and final success.

Situated as I have been all these long years, related both to an extensive system of public schools in which general education is carried on, and to special schools in which technical instruction is given, and tracing the careers of many pupils and students through all grades, and during a long period of study, watching developments in them all as a sentinel watches at his post, I have been enabled to form opinions and arrive at conclusions based on sufficient experience, and resulting from careful analysis of subject and character, which I hope and believe are logical and trustworthy.

I claim for these opinions no other value than that which attaches to the evidence of a witness in a trial, and that they are the result of work, patience, and long-suffering, presented honestly and with good intent. It must be for others with more experience and greater influence to judge of their intrinsic merits, and decide how far they may be embodied in public action to achieve your purpose.

THE MUSEUM.

The educational resources of the museum seem to me to be comprehended in the following: viz., —

1. The permanent exhibition of industrial masterpieces and examples of skilled workmanship.

2. Periodical displays and loan collections of ancient and modern work.

3. Annual competitions or *concours* of art workmanship of every kind for rewards by apprentices, art workmen, and students.

4. A reference library of illustrated and technical works.

5. Courses of lectures and demonstrations upon the several departments and contents of the museum and periodical exhibitions.

Upon each of these divisions I propose to speak in a general way, regarding them as parts of a great scheme of technical education, and their association in one and the same enterprise as being interdependent and complementary.

I. — PERMANENT EXHIBITION OF INDUSTRIAL MASTERPIECES.

There is little to be said concerning this main part of the general scheme, modern museums being generally well administered.

The system of classification for the different objects and industries, including their chronological, geographical, or physical distinctions, is capable of adding much to their educational value and appreciation by visitors.

This is sometimes, however, not sufficiently recognized; and then a museum becomes simply a collection or assortment, having the character of a storehouse or warehouse, and its contents are as isolated and meaningless as an aggregation of natural curiosities.

Yet by methodic arrangement the same works may be made sequential as the chapters of a book, and as readable as its open pages, telling of human skill and character displayed by races of men at different epochs, by communities in historical places, or by famous individuals whose names have been associated with excellence in particular industries, marking the stages or triumphs of civilization.

The value of such objects from an artistic or educational stand-point should be great to entitle them to a place in a public collection: but the general impression of the whole exhibition made upon the minds of visitors, and the distinctness with which all points of interest are presented to the average intelligence, are of importance also; for they are the tests of success in a popular exhibition.

It is remarkable how much thought and money are sometimes expended to get together for longer or shorter periods things which in themselves are rich and rare, and how very little of either money or thought is afterwards employed to insure that they should be understood, as well as seen, by the thousands who gaze at them.

Even the simple matter of labels on every object or work of art, giving concise information such as spectators require before the object can be fully appreciated, is rarely attended to; yet such laconic information adds very much to the interest and understanding of the public.

It is too often taken for granted that those who visit a museum know every thing about its contents, though the reverse is usually true; and the supposition should be, that nobody knows any thing about the objects in it, but that people go there to learn.

Every thing in a museum should be perfectly, even if tersely, described by a printed or painted label or tablet, as easily seen as the object itself; and the departments or groups of objects should be similarly treated and classified.

It ought not to be possible for any intelligent person, or even a child, to go away from the exhibition with a wrong impression, or without the right impression, of the name and nature of any thing which the object as presented to his eyes was intended to make.

This does not assume that people will be able to see all that they look at: for the faculty of vision is an altogether different thing from the sense of sight; and we only *see* that which we look *for*, not that which we look *at*, — each person seeing much or little of an object in proportion to his mental sensitiveness created by previous knowledge.

This popular presentation of the objects in a museum by means of tablets or legends is becoming more general than it used to be; but even now I venture to suggest, that, of the total cost in money and labor required to provide for an exhibition, temporary or permanent, the proportion devoted to its intelligent appreciation is not commensurate with the expense in organizing it.

As a part of this work of presentation, beyond the mere display of objects, is the provision of cheap illustrated catalogues of sections or departments of the exhibition. There is a series of such publications issued by the English Committee of Council on Education, and sold at the South Kensington Museum, whose contents are illustrated in them.

The subjects of these are, —

1. Textile fabrics.
2. Ivories, ancient and mediæval.
3. Ancient and modern furniture and wood-work.
4. Majolica.
5. Musical instruments.
6. Persian art.
7. Manual of design.

These are written by acknowledged authorities, and are illustrated by numerous and excellent woodcuts, the selling price being twenty-five cents each book.

A series of smaller hand-books of historical sketches is also provided, admirably illustrated ; yet each can be bought for two cents. Their titles are, —

1. Gold and silver work.

2. Bronze, copper and iron.
3. Enamel.
4. Furniture.
5. Ivories.
6. Pottery and porcelain, in two parts.
7. Majolica.
8. Glass.
9. Mosaics.
10. Arms and armor.
11. Textile fabrics.
12. Lace.

Neither of these sets of publications are in exactly the best form for the purpose which they might fulfil, for they are neither hand-books nor catalogues; and, to carry the museum into every home and every household, we want a guide-book which shall be both: yet, as they are, it must be acknowledged they are extremely valuable auxiliaries to the museum and its work.

It may be said that such illustrated hand-book catalogues might not be profitable commercially; but that can hardly be considered an argument against them, for the museum itself is not directly profitable as a commercial investment to its immediate conductors.

The real question is, whether, having in view the ultimate purpose of such a museum, this mode of disseminating information and of kindling an interest in its contents is not as directly effective as any other expenditure to obtain that purpose.

It seems to me that this is undoubtedly the case.

A student or mechanic who is examining a department of the museum in which he is particularly interested, would find that a well-illustrated guide-catalogue economized his time and assisted his study.

Carrying it away with him as a reminder of his observations, and to some extent a text-book of the subject, it would be preserved and referred to, and probably influence him to pursue his investigations more completely, and direct his further studies.

The provision and sale at moderate prices of such works in separate sections would be as legitimate and efficient an expenditure to produce the desired result of popularizing the museum and maintaining its interest and influence, as that which is incurred in keeping it open for exhibition; and the inevitably large circulation of the books would carry the work of the museum into thousands of homes that could be reached in no other way.

People never willingly destroy picture-books; and, if a word to the wise were sufficient, look at the circulation of some illustrated periodicals, whose literary contents without the pictures would be trodden under foot with scorn and loathing, even by those they defile and corrupt, — as they now are by all decent persons, — whilst others of a better character owe their popularity to their illustrations alone.

When technical classes — such as drawing on wood, wood-engraving, and etching — have been added to the general and normal classes of the school of art, the students could be employed as a part of their training to execute illustrations of objects in the museum which it would be advisable to use in the catalogues; and thus both the public and the students would be benefited.

The provision of full explanatory labels upon the objects themselves, to a great and valuable extent, dispenses with the need of an unillustrated catalogue, though even such a record has its value, being useful for reference away from the museum; but the illustrated work discharges altogether different educational functions, so influential and far-reaching that it would be difficult to overestimate its benefits.

This appeal to the intelligence and mental faculties through the eye is not yet sufficiently appreciated or made use of by wise men, though it is so appreciated by the wicked and unwise.

Illustrated notes on picture exhibitions, poor as they usually are, to some extent recognize this principle, are always popular, and generally well preserved afterwards as records and mementos. The compilers of modern text-books for school-children of tender years do appreciate the educational value of pictorial illustrations in appealing to the mind; and by actual experiment it has been demonstrated that the youthful perception of numbers and of some physical characteristics is assisted, and, in some cases of dull children, almost created by pictures.

And so we have "readers" and "arithmetics" and "geographies," to say nothing of children's serials, profusely, and I would say wisely, illustrated.

This is on the same principle that object-lessons are found in education to be so much better, and make more direct and lasting impressions on young children, than mere text-books or abstract teaching, without physical illustrations. A picture has been defined as something between a thought and a thing, — a compromise between physical and mental sight, affecting both. The educational value of pictures is based on this, and on the fact that the senses of children are fully developed from the first, are nature's channels of information, her chosen ministers for protection and sustenance to the individual before the reasoning powers have been developed.

About pictures, human creatures are always children, no matter what their age be, nor for what purpose the pictures be made. The curiosity displayed to see works of art belongs to neither sex exclusively, nor to any social condition or even race of men. It is perennial also, — a perpetual note of interrogation that is a most potential ally of education if it be properly considered and wisely answered.

Therefore I would say, provide illustrated guide-book or hand-book catalogues of the museum, each to be both guide and text book, and scatter them at reasonable prices broadcast.

It is such adaptation of means to the end sought, upon the basis of the actual present condition of the education of the people, bringing the accumulated wealth of agencies for improvement down to the level of those to be benefited, that makes the difference between a living and life-giving influence, like that of the South Kensington Museum, and a raree-show like the British Museum, rich, solemn, and majestic though it be.

Grand as is the latter as a national monument, its relation to the former is like that which a bronze statue erected to commemorate the achievements of a dead warrior would be, as compared with the living hero himself victoriously leading his forces on the battle-field. The one is a shrine; the other, a school, — one, historical record: the other, living power.

A mummy embalmed in all its panoply of ornament and story is interesting, but a live man at work is absorbingly attractive; and a real dead Pharaoh in gorgeous array of royal cerements of undoubted authenticity, and sumptuously presented as received from the pyramids, could not hold his own at an exhibition, in competition with a live workman in his shirtsleeves making a pair of boots.

The difference between the two is only life and death, actual and symbolic; but that is something.

Some museums are of little use, and historically less interesting than a mummy-case, which does not always even contain a dead Egyptian, though it is the virtue of many modern collections that they are administered upon the principle that a living influence is better than a dead accumulation.

The whole world is a workshop for live men, and a tomb only for dead ones; and our houses are either laboratories or sepulchres, as we choose to make them.

So also with our public institutions, which are what they are, either alive or dead, according to their use and conduct; and there are intensely respectable museums, costly enterprises, nominally public and vital, about which, after we have visited one of them, all we can distinctly remember is the prevailing odor of a departed Pharaoh.

It may be said that a museum of industrial art, which is neither a collection of antiquities nor a warehouse, runs no risk of this dry rot of respectable uselessness.

But this is the natural tendency of such institutions; and it needs the vitalizing influence of a defined educational purpose, broad and catholic in its aims and means and aggressive in its spirit and conduct, to keep the youthful promise forever perennially young and fresh and fragrant, and guard it from the human habit of growing old and rich, lethargic, and craving for repose, and the inevitable final slumbers.

Society never dies, and never grows old, nor should a museum of industrial art; for the human race, which is continually throwing off its waste material, is also perpetually renewing itself by a youthful element of ambitious and ignorant individuals, in dire need of the cultivation a good museum can help to give them.

It can hardly be necessary to say, that, under proper conditions, the museum should be open to students of the art school, and other students who desire to draw or study from the examples. That is so evident a part of the work, and so important a part also, that the limitations to such study should be few, and the encouragements many in every museum.

The use of choice examples of workmanship in ceramics and the precious metals as subjects for time sketches and still-life groups, involving their temporary removal from the cases to the studios of the art school, is also a proper and legitimate disposal of them at intervals.

Every student who applies for admission to draw in the museum might be required to show his capacity to profit from the opportunity, if granted, by drawing on the wood an illustration of some selected object as a contribution in kind for the privilege, and to be used for the illustrated catalogue.

The same work for the same purpose should be required as an annual exercise by every student of the fourth grade in the art school above the first year's class; and by that means the museum would soon possess, from the pupils it was thereby helping to train, the materials for the catalogues which I have described as of so much importance.

II.—PERIODICAL EXHIBITIONS; LOAN COLLECTIONS.

The permanent collections, limited as they should and must be by availability and outlay, may be enforced profitably by the expedient of periodical displays, occurring at regular intervals, and consisting of masterpieces and examples in assigned branches of industry, varying at different exhibitions,—a few only being represented at any one occasion. Whilst convenience and order would suggest the disposition of objects in groups which assist in their appreciation, it does not seem to be necessary that the source of supply should be limited to old work or confined to modern productions.

This is a nation of travellers, without an ancient, mediæval, or scarcely a modern art history of its own, inheriting the instincts and tastes of men who built and adorned the cathedrals and abbeys of their fatherland; a nation of collectors, having the same blood as the people who possess Raffaelle's cartoons, the Elgin marbles, and the Koh-i-noor diamond; a nation of workers, for whom wealth accumulates in a land where, let us fervently hope (despite of Goldsmith), that men will not decay.

From the pilgrimage of these travellers no country is protected, and no unexplored or exclusive Mecca lying anywhere between the poles is proof against their crusade of investigation.

The *race* which acquired, annexed, purchased, conquered, confiscated, or took possession of lands and territories in the olden days, until the picturesque bugle-call of its dominion is now heard round the world, and the sun never sets on its empire, is correctly reproduced in modern times by the wealthy art-collecting travellers from the shores of the new world.

Here then is a guaranty for the supply of objects for often repeated exhibitions,—an unfailing source that is safe as well as sure; for on a broad average the people who care enough for old or even modern art work to find it out and become possessed of it, will be likely in many cases to choose the best.

The continuance of peace and prosperity, and the law of development, seem to have resulted in very recent times in this country in a decidedly artistic movement,—a kind of æsthetic irritation, which will contribute its share towards furnishing material for periodic exhibitions.

I regard, therefore, this means of enlisting interest in the subject of industrial art and the work of the museum, as important, and as being fully competent to repay the outlay and compensate for the trouble involved by the undertaking.

Held simultaneously with annual exhibitions in other departments, and not interfering materially with the permanent display, these occasional expositions will protect the general enterprise from stagnation and loss of interest, and cause a healthy circulation of views on art topics among the masses, and in particular directions an annual revival and awakening that will increase and perpetuate an active vitality in the cause.

In the same manner the permanent exhibition is strengthened by loan collections of objects, lent by their owners for public exhibitions for longer periods than the annual displays, but for a shorter time than is involved by a donation. This is a development of recent experience, and it is an unfailing indication of generous public spirit in a community, when wealthy men who possess some of the world's treasures are willing to share their enjoyment with the less fortunate people, who have no other means of gratifying their interest and improving their taste.

The instruction in practical designing, which will form a part of the education given in the art school, will be greatly assisted by these occasional and loan exhibitions; for object-teaching is nowhere more applicable than in demonstrating principles of design by reference to their application in completed objects.

The best examples of modern industrial art will thus be made to influence the education of the class-room, and emphasize the lessons which are given by the specialists in the lecture courses on technical subjects.

Thus by co-operation all may derive benefit through the wealth of some and the public spirit of others, utilized with intelligence for the common weal; whilst the interests of true economy are also served, and an impetus is given to the public consideration of the value of skilled labor and its development.

I consider such additions as periodical and loan exhibitions, therefore, as a valuable and almost a necessary part of the resources of an industrial art museum, and their influence in every direction to be an unmitigated benefit to all concerned.

III.—ANNUAL COMPETITIONS OR *CONCOURS* OF ART WORKMANSHIP.

Such competitions have been held in some of the old countries, though not, I believe, at regular intevals, nor by any public or permanent organization.

They have been beneficial to the branches of art industries thus encouraged, and have been the means of inspiring or disciplining many young men of promise, who might otherwise have made a less profitable use of their spare time than in preparing for these friendly contests.

In many respects they form the natural sequence to the general instruction in drawing and design given in the art schools, and are tests of the practical value of such instruction.

The occasion often makes the man, and from the *salon* to the competitions for Christmas cards, thus ranging from the sublime to the ridiculous, the call for work provokes the reply.

We can hardly estimate the amount of real ability smothered or running to waste, and the time lost by thousands of young people in any large community, which might be profitably utilized, if the opportunity and suggestion confronted them of exercising and testing their abilities.

The mechanic and art workman who is engaged upon work in the factory or the shop with which his name will never be identified, and, often from the exigencies of trade, work of such a character that it is beneath his real powers, sometimes longs for the chance to show what he can do at his best when all limitations are removed; and wants to know, in the light of open competition with his fellows, how his best compares with the best of other men.

Annual exhibitions of pictures give the opportunity to the professional artist; but the artisan is not often so privileged.

A museum of industrial art might well offer him this opportunity, encourage his ambition, and direct his efforts.

The adult workman is more satisfied to work by himself than in schools, and at his craft rather than at the elements of his craft in the class-room.

A vast constituency of cultivated purchasers and skilled producers is being quietly formed, whose tastes will demand a higher standard of art work in the future than has been sufficient in the past.

Household taste is of general interest and influence, and is as capable of improvement as painting and sculpture are; with the added incentive, that, whilst interest in the latter arising from possession must always be limited to the few, that in the former is as wide-spread as are the homes of the people.

It may be questioned whether the skilled workman needs this opportunity, or would avail himself of it, or be benefited by it, all of which queries the experience of other countries answers in the affirmative.

There is no more fruitful or economical source of improvement in any art or industry than the holding of fixed periodical exhibitions and competitions.

By their influence the best standards of taste and skill are substituted for lower standards, which disappear, distanced and defeated.

This is no theoretical statement, but a record of development.

I have examined critically all the great international exhibitions, save one, and believe that the worst work at the last, in 1878, was better than the best work at the first in 1851, — an improvement which nothing but such periodical and universal exhibitions, recurring as often as they have done, could possibly have produced.

The light of the world focussed on the inferior, the dishonest, or the meretricious in any art or industry, scorches and consumes it into impalpable and atomic nothingness; whilst it refines and fuses the honest, the true, and the beautiful into the brilliancy of the diamond, or the strength of adamant.

As technical schools for adult workmen, *concours* and exhibitions will give lessons which are seldom misunderstood to pupils who are never inattentive; and to the public they will furnish economical instruction and enjoyment for people who are incapable of assimilating it combined in other forms, and kindle an interest in human skill and progress which, once awakened, will have a healthy existence, and not soon die.

For success in such competitions of art workmanship, there should be substantial rewards — besides the opportunity of selling the designs or works — of intrinsic value as well as honorary; for the workman's needs are pressing, and his recognition, to be of advantage to him, should be immediate. The artist makes more from his reputation than the artisan does, for he is his own master; but the man who works for an employer, and is paid by the hour or day, gives him the benefit of this reputation, as well as his time.

Local industries will suggest the subjects of some competitions, though not of all; for, to be of healthy influence, the *concours* should be open free to all who live under one flag. They should, however, be limited to students, apprentices, workmen, and amateurs; professional artists being disqualified, as well as those who employ the labor of others in the branch in which the competition is held.

Other limitations, geographical or personal, are unnecessary, as will be found by experience.

IV.—REFERENCE LIBRARY OF ILLUSTRATED AND TECHNICAL WORKS.

The scarcity and cost of many illustrated and technical books place them entirely beyond acquisition by students through purchase and ownership: yet such works are helpful and profitable for reference and study; and experience has shown, that, when easily available, they are made use of with good results by those most in need of their help.

Great public libraries have not sufficient accommodation for full collections in every department of technical literature; nor would they, perhaps, be justified in giving room to much that would be valuable in a technical library, — viz., the bad as well as the good.

Another consideration is, that, with the exception of a few great national libraries, reading is more encouraged in them than study, and is, therefore, more pursued.

Technical and art students are not popular guests with librarians; for they take up too much room with their large books spread open for comparison, analysis, or copying, and give infinitely more trouble *per capita* than less aggressive and more peaceful visitors. This is not the fault of the librarians; for, of all the long-suffering and gentle creatures in the world, the hushed and patient librarian is the most kind and considerate.

Nor is it the fault of the eager student that he should want so much room, and give so much trouble, and require so much attention: it is his veriest virtue, to be commended and encouraged.

It is an instance of the right man in the wrong place when such a student invades the sanctuary of a reading-room in a public library; and the remedy is to give him the right place for his work, — a reference library of technical books and prints, with scope and convenience for study.

It is suggestive of the great value of such technical libraries, that, where they have been established, much benefit has resulted, and successful men in the world of industry have made great use of them as students. In my own experience I have observed, that, if once a student forms a habit of regularly visiting a library for actual study, he acquires the true instincts of a student for life, and is on the high road to success and distinction.

Schools and museums, if doing their work, and on the right track, ought to be constantly raising questions in the minds of serious visitors and students, that the library alone can answer. As collecting agencies for the technical and illustrated literature of the world, having reference to art, education, and industry, and securing for the student the best works for consultation and reference as soon as available, there is a great and important work to be done by the art and technical libraries in connection with museums and art schools, neither of which can be considered as complete without this department.

They will also offer the opportunity to those who possess rare or valuable books to give them to the public for preservation and profitable service, which many will value and accept.

Collectors of books have sometimes the same affection for their treasures that picture-collectors have, and might, if once the fashion were set of doing so, be as ready to put them to as sensible use by giving or bequeathing them to public collections.

The contents of such a library come naturally under two distinct divisions; viz., —

1. Works of large size, great value, or rarity, or belonging to an important series, for reference alone, and not to be taken away, because it would be difficult, impossible, or costly to replace them if lost or injured.

2. Works of value, which, if injured or lost by accident or otherwise, could be replaced, to be loaned to students.

Of the two departments, the first is by far the most important, and should include copies of all works which are in the second division also.

Papers and publications, to be acquired by gift or purchase from institutions and exhibitions all over the world. Blue books and yellow books, reports and prospectuses, issued by governments, societies, and corporations, trade catalogues, etc., to which house-room would not be given in many libraries, might here find a place, — often to be consulted by those who, at the present or in the future, may be engaged in the work described, or in compiling records of similar work.

No book is more useful in the designing-room of an art school than the illustrated trade catalogues issued by the best firms of manufacturers, and none are so difficult to procure.

Every trade or technical book which is published and procurable would be of value to some student ; and the limited number of text-books which refer to trades and industries should necessarily form a part of the collection.

I do not refer to the usual standard works which suggest themselves, nor to any current literature in relation to the arts and industries, because it is assumed that they would be all available in such a library, of necessity.

The second division, the loan collection, need not necessarily form a part of a reference library, and, when it does so, involves the most work and the greatest risk of injury and loss in all libraries.

But, on the other hand, the loan collection of valuable text-books which are beyond the reach of poor students, may, if judiciously protected and by guaranties of care in use, be made of much educational value in directions where such help is most needed.

After all, the best possible use to which a text-book can be put, is to be honestly worn out; and a dilapidated wreck of a book that has served in the education of successive generations of students, is a much more beautiful and sacred thing than a clean, uncut copy of it, — just as a torn and riddled old battle-flag, under which men have fought and bled and won victories, is more precious and beautiful than any new piece of silk in a dry-goods store.

Use seldom destroys books, but bad binding often does; and, if it is possible to get a good book thoroughly well bound, it will outlive any amount of use.

The only books, however, which need be provided for loan, are such as the student or workman needs, and could not afford to procure for himself; and this does not include common class text-books, if any be used in the schools, and their numbers ought to be limited.

V.—LECTURES AND DEMONSTRATIONS.

As a part of the means whereby the museum may be made serviceable to all, public lectures of a popular kind, though upon technical subjects, are likely to be valuable and appreciated.

By their establishment the ripest form of special skill and experience may be secured for the public and for students.

The subjects treated should be such as can be illustrated to a great extent by specimens in the museum, on departments of industrial art and science, historical or practical.

Industrial subjects and processes are really of great interest to the public as well as to students; and masterly specialists in them are as likely to become popular lecturers in that field, as they have already become pre-eminent in the field of science.

A large city like Philadelphia must contain many men whose wide experience eminently qualifies them to give short courses of two or three lectures upon specialties; and this supply could be supplemented by others from a distance.

Practical men and great students sometimes object to the formality of lecturing, and the embarrassing atmosphere of the platform; and they are precisely the people who have the most to tell, the best right to speak, and are the most interesting to listen to.

Appalled at the formidable name of a lecture, an accomplished specialist not given to making public appearances, has been known to give what was described as a "talk" so captivatingly that it stood in the place of a lecture, and, more, an experience worth remembering by lecture committees.

The students at the art school should be required to attend these lectures, talks, or demonstrations, as a part of their regular work, and be examined on them as they are upon class lectures.

The wider the range of their studies, the better: for students are apt to become narrow and hide-bound, unless their minds are directed away from their class-work into broader fields, and away from pet subjects; and it would be more profitable to have twenty good addresses or demonstrations on half that number of subjects from ten thorough specialists, than to have more lectures from fewer men.

The public may be expected to attend high-class lectures from first-rate specialists, as the experience of the Lowell Institute in Boston proves; and this attendance would contribute materially to the understanding and public appreciation of the museum and school as practical elements in the educational agencies available to the community.

There need be no fear of a lack of lectures of the right sort.

Every year brings forth some man or men who after years of study can offer the fruits of research or travelled observation to the public, which often prefers to take its information in this form about historical and literary matters, because it is more economical of time and less exacting than reading books or going to school.

To the art student and workman attending the school of art such lectures and demonstrations are especially profitable, enlarging their views, compressing general instruction into short spaces of time, and giving the future teacher the best illustrations of methods of teaching by those who have concentrated their attention upon one branch of knowledge, art, or industry.

There is necessarily a clear distinction to be made between a general treatment of any subject such as would be palatable to both classes of auditors, and the class lecture of the studio or laboratory; a difference of presentment so well understood by Huxley and Tyndall and Richardson.

At no time so much as at the present has art in the house and home been of such attraction to vast numbers of persons; and this is but a phase of the general movement which makes the Pennsylvania Museum and School a possibility, and will, if properly directed, insure its continued success.

But the permanence and healthy influence of this interest will depend upon the crystallization of a floating public sentiment into organic public taste, resting on the foundation of a knowledge of the true and appreciation of the beautiful; for otherwise we may expect it to pass away as a fashion does, or be as short-lived as the many piquant art crazes which in recent times excite the enthusiasm of the frivolous, and give harmless occupation to the indolent.

Then, also, it may be expected that the better among skilled workmen, or those who aspire to become so, would avail themselves of means of improvement which involved attendance only for a short time at intervals of a week or so, who could not give up sufficient time to become students in the evening classes.

This effort to provide profitable recreation, not too exacting in its claims, yet leaving a residuum of good behind it, together with other appeals to adult workmen, made upon a considerate and generous estimate of their needs, will probably attach many to the museum, and give them a sense of ownership in it and co-ordinate duty towards it, that a judicious management will find it advantageous to foster and keep alive.

Working-men's colleges to some extent attempt to supply the need which adults feel for the higher education; and, where the lectures or addresses are by men of mark, they are well attended.

The university for the workman must be an evening institution; and if its chief mission be to those already practically engaged in industry, having whilst educating themselves to keep the wolf from the door, it must address them when they can listen, or be content to go unheard.

With such a wealth of material as already exists in the museum, to be constantly added to, as sensible men learn how to utilize their treasures; with such a constituency as the great capital of a great manufacturing State offers; and with such interest felt and need for improvement in many branches of industry as now actually exists,—it seems to me that practical lectures and demonstrations could not fail to attract a large audience, and be amongst the most successful features in the propaganda of the museum.

I have thus reviewed, from a general and educational standpoint, some of the agencies and means whereby a museum of industrial art may be made serviceable to the public.

To recapitulate: the permanent exhibition, periodical exhibitions, and loan collections, *concours* of art workmanship by workmen, a reference technical library, and courses of lectures and demonstrations, all suggest an active participation in the work of popular industrial art education, in directions which are not likely to be pursued by any other organization.

It may be that, in taking up each of these phases in order of their enumeration, I may have sometimes unduly magnified its value as a department only of a general scheme.

The perspective which comes of viewing all these details in one general effect will cure this contracted focussing should it be felt to exist, and upon this I rely; yet I venture to state that only those who have responsibly conducted a scheme of industrial art education for many years can properly estimate the bearing and importance of every one of the agencies described, or know how the enterprise may be hindered and crippled through the entire absence of any one of these means of improvement, which, isolated from the rest, may appear to be of no great importance.

There is one feature of a museum, especially if it be related to an art school, which may be made of great value in cultivating both historical knowledge and public taste; and it is equally capable of attainment and usefulness.

I refer to the formation of an extensive and complete collection of casts and reproductions.

For the purposes of study, and as illustrations of historical art, excellent casts from the antique and standard examples are as good as originals.

There need be no limit, but that of expense, to the acquisition of masterpieces in sculpture of figure and architectural ornament at the present time, because the art of reproduction in electrotyping and in plaster of Paris has attained such high excellence, and been brought into so extensive a requisition, wherever works of the first order have been possessed. This is the most characteristic and valuable part of the Boston Art Museum, its chief wealth, and is the result of especial interest in sculpture and architecture felt by two of the trustees, prominent local amateurs.

I commend this idea of a comprehensive collection of casts to the attention of the trustees of the Philadelphia Museum as a very important matter, one of unexceptionable influence, and necessary to the resources of an art school in the first rank.

Such a department of the museum, whilst it is the only means by which works of art equal to the great originals can be made available to the public and students, will also be the least costly part of the collection, and artistically and educationally the most profitable.

THE SCHOOL.

A school of industrial art must have an object as distinct, and employ means for its attainment as clearly defined, as those which are the motive and method of an academy of fine art.

How much or how little the results to be accomplished by their educational subjects and modes are the same, or how much they vary, is a matter upon which opinions differ, though there has not yet been very serious discussion of the subject by competent persons, familiar with the ends sought and means employed by successful instances of both classes of schools.

Controversialists are usually one-sided, and this subject offers them grounds of difference. Students and patrons of fine art are too apt to ignore in education the importance of the scientific basis of true drawing, upon which all intelligent art must rest; and their opponents often underrate the value of purely artistic study in such subjects as the human figure and landscape-painting as a means of developing power and skill in drawing, and taste in design for industrial purposes.

It is said that a tree is known by its fruits; and if it be clearly understood that the education sought to be given in this school is to be popular, industrial, and artistic, then its fruits should be the education of all people within range of its influence who are engaged in industry capable of being affected by art power.

How this is to be secured in the broadest possible manner has been already determined by the experience of other communities.

The professional training of art students in academies of fine art gives neither the skill necessary in design for manufacture, nor does it influence the popular taste; so that neither the demand for industrial art, nor the means of its supply through the education of designers, is insured by their action. It is no discredit to schools of fine art that this should be so: for they do not aim to educate the public, but individuals; and their test of success is the production of a few good artists, not the elevation of household taste, and the development of skilled labor among artisans and designers.

The maintenance of a drawing school which would be only a preparatory school for an academy of art is clearly, therefore, not the agency required by your scheme: for, should it fulfil that purpose only, the final result would be a misdirection of the principal aim, the accomplishment of a sectional side issue rather than the main objective result, viz., popular industrial art education.

This was the error into which the English experiment fell previous to 1851, — the establishment of drawing schools, in a few centres of industrial activity, under the name of schools of design; and it took all the years from 1836 to 1851, with the Universal Exhibition of the latter year as a final and crushing argument, to prove that such schools were inadequate to remedy a lack of taste and industrial skill in a nation.

More radical measures were necessary, and were adopted, no less democratic and sweeping than the instruction in the elements of art of all the people.

The agencies employed were of three kinds, —

1st, The teaching of industrial drawing in the public or national schools.

2d, The establishment of the South Kensington Museum.

3d, The formation of a normal art school for the training of teachers of art.

Broadly speaking, the application of such remedies has been successful; and that is why I suppose the responsible managers of the Pennsylvania Museum and School of Industrial Art are not unwilling to state that they propose to assimilate their operations, so far as local circumstances favor, to the successful experience developed at South Kensington.

Familiar as I am with this movement in England, through having been associated with it from its inception until it had passed the stage of experiment, and conscious of defects in it, as there must be in all human efforts, I do not hesitate to say that to-day the world recognizes the wisdom and success of the English Government in establishing and maintaining this trinity of agencies to secure popular industrial art education.

The progressive nations of the world are now demonstrating their appreciation of it by the sincerest form of recognition; viz., by following the example thus afforded them, and the adoption of similar measures.

I refer to this oft-told tale only because it enables me the more directly to indicate what should be the character of the school in Philadelphia, if it form a part of so comprehensive a scheme as is contemplated on your general plan, on the model of the English experience.

The *first* of these agencies, teaching drawing in the public schools, has been begun.

The *second*, a museum of industrial art, is in existence.

The *third*, the establishment of a normal art school, is the work to be accomplished to complete the unbroken chain.

This would appear to be the only way in which the school can be made as publicly useful as the first two agencies are, or be the complement of them.

It is also the especial work which is not, and probably will not, be undertaken by any other organization, public or private; whilst, without the production of trained and educated teachers of drawing, it has been proved that general success in cultivating popular taste among the masses, and in giving them the opportunity of instruction in the elements of art, is practically impossible.

The academy to produce artists, the drawing school to produce designers, may or may not fulfil their purposes according to circumstances; but neither of them proposes to, nor ever otherwise than by rare accident do they, produce teachers of drawing.

Here, then, is the missing link which the school can supply, and by it alone can this most essentially public work in popular education be accomplished; for thus only can the broad and strong foundations of public taste be laid in the general schools, by the teaching of drawing and design to all.

But it may be asked, Why should the school be a normal school for the training of teachers only?

My reply would be, that it should not be exclusively devoted to the training of teachers, nor to the education of designers or art workmen only, but to the study of the subject of industrial drawing and art in the best possible manner.

If we remember that a teacher must *know* any subject which he has to teach, so practically and theoretically as to be thoroughly master of it, in order to make it clear to others and solve new problems that may arise in it, it must also be evident that nothing short of the very best and most thorough study of the subject will be sufficient for his education.

This very best course of study for him will be the best for all; and we should be content with nothing less than the best for any one who is in earnest.

The time when people supposed that art power was a gift, which could be regarded as a substitute for hard study, is passing away; the stranded wrecks of vain persons who have so speculated, warning artistic mariners of the dangers from sunken rocks in that neighborhood.

Every thing is possible to those who have the will, but to none without labor; and the most systematic and comprehensive scheme or plan of labor, other things being the same, is the best for all.

Schools of art have been too often conducted as though they were conjuring-rooms where tricks were taught, or languishing-places where geniuses waited patiently and yearned silently for the inspiration to come along.

A very small percentage of students in any art school ever achieve success in art or education in after life through what they learned in the school; and the principal reason for this is, that in no schools have the subjects studied been so wretchedly taught as in art schools.

For this reason, and because the people and their industries, true art and sound education, will be more directly reached through the methodic and thorough study of the subject that is carried on in a normal art school, I suggest the establishment of such a school in preference to any other.

What the curriculum of the school ought to be will be treated upon further on; but here it seems proper to make some general observations upon the character of a school of art conducted wholly in the public interests, and not in those of a profession or class.

It is well known, that, after the youthful period of professional education in art is passed, the students may develop in either of two directions, seldom in both, — one, in teaching the elementary principles of art, and its language and processes, to others; the other, in applying those principles and using that language in original compositions as a practising artist.

Both must be artists: but the type of mind necessary for success in teaching is different from that which leads to success in practising a specialty in art, whether in painting, sculpture, architecture, or industrial designing, — the first being analytical and diffusive, the second observant and constructive; the first being at home before his class, the second at home before his easel; whilst it is almost an invariable rule, that if either attains to great excellence in one department, whether of education or of practical art, he is disqualified for the other.

It is profitable both for society and for the individual, that each of these types of mind should be recognized and allowed to do its own work, and not be forced to do that which belongs to the other.

The school should be thrown open to all who seek admission and comply with the conditions, on the understanding that the training to be given in it is to be thorough, exhaustive, and as complete as human ingenuity and generosity can make it, and that this course will not be departed from to suit the private whims or personal needs of any individuals.

Having received such a training in the elements and practice of art, the student must be expected to carry his skill to the best market, whether as teacher or practical artist, as the demand arises, or as circumstances decide ; and this he will do, and has a right to do, and it is best for all parties concerned that he should do, without hinderance and without reflection on his faith.

This last consideration seems to me important, because some normal schools require a pledge from their students that they will teach for a certain time when their training is ended, and exclude those who object to this promise.

Such a pledge is useless and unjust ; for many of the students, however good their wills, will be unfit to teach. And, to be just, such an undertaking on the part of the student involves the responsibility on the part of the school to find employment for him, irrespective of his fitness, when he is ready to teach ; and that is something no normal school can honestly agree to do.

So that a pledge thus extracted from a suppliant for education, in a country which prides itself on its free schools, is as unjust as it is useless. It is disregarded in practice, and should be abandoned as a mere form.

There is another phase of this subject which, being a source of much confusion to some, may properly be referred to here.

A school, normal or other, can only give the student information and practice enough by training and testing his powers and character to become a teacher at some time in the future, after his connection with it as a student ceases, and he chooses to devote himself to teaching.

It does not necessarily make a teacher of him ; for that can only be done by himself alone, by practical experience in the class-room, teaching real pupils, and facing all the difficulties involved therein until he masters them, not only teaching the pupils, but making them learn; for that is the test of his success. Nor must it be supposed that the best preparation for teaching is the practice of teaching during the period of training, though normal methods by very experienced and successful instructors should form a part of the intellectual education given in the school, as a study in psychology.

It is more important for the student that he should receive a splendid and thorough education in principles and practice, a comprehensive personal training, so that at some future time, if the opportunity be given and the desire is felt, he should know enough practically and theoretically of his subject to teach it well, than that he should be set to teach a subject before he knows it himself.

Concerning the general plan for the studies of the school, there need be no difficulty; for happily such work is no longer an experiment, though there is still room for improvement.

It is better, on the whole, to formulate a course of instruction which shall cover the ground of art education, embracing all subjects which involve a knowledge of drawing, coloring, modelling, and designing in all industrial pursuits, and such as may be required to be taught in every grade of school in the future, whether general or technical schools, than to begin on an unsymmetrical or incomprehensive programme, requiring occasional patchwork to make it complete.

The object of this is, that a graduate of the school who has the teacher's instinct may be able to take classes in any department of the instruction in technical schools, as well as to superintend the work of others; and though, from the absence of early and preliminary instruction in the elements, such as all children in the public schools should have, it may not be found possible to insist on a very high standard of attainment in all the works and exercises of the students at the first, yet it will be better to do the best attainable on a good plan, and gradually raise the standard of excellence in works as students come better prepared, than to limit the course of study for the sake of giving more practice in a few subjects or branches of art education.

Such a programme should include mental and intellectual culture, as well as the physical discipline of hand and eye; the theory and science of graphic art in all its details and phrases, as well as the practice of drawing in all its branches and with all implements or vehicles, as tests of the sensual as well as the intellectual perception of physical phenomena in so far as they appear alike to all.

The study of form and light and shade must be approached through the elements of graphic science, resting as they do upon laws that do not vary; and thus the appreciation of color, the cultivation of taste and originality in design, will be prepared for on a basis of scientific discipline about facts, which can never be a matter of opinion only, or cease to possess the attractiveness of the true.

Knowledge of the regular must precede a correct appreciation of the irregular; and familiar acquaintance with the law is necessary to an understanding of the exception, the instance, or the variety, in art as in every thing.

Even taste is the exercise of knowledge either in choice or performance; and that taste which claims to be the result of innate or natural appreciation of the beautiful only, not arising from mental training and discipline, or well-directed study and practice, rests on a very insecure foundation, and is more likely to be an *ignis fatuus* than a beacon-light, and all which that implies.

In considering this subject of art education people are very apt to be diverted from the broad highway of education into some of the many by-paths of educational specifics, ignoring general principles which apply to all subjects of instruction, and adopting methods designed by ignorant persons as short cuts or royal roads to art power.

Against all such delusions a great public institution should make protest and perpetual war, both by example and precept, in the character of its own curriculum of study, and the means employed for carrying it out.

So, with reference to the vehicles or mediums in which the study of drawing is pursued, there is much clannish preference shown by some persons, whose experience is provincial rather than cosmopolitan, for the use of one material or instrument in practice over another; some claiming that the use of charcoal and the soft point, or stump, are necessary for the study of drawing, and development of a good style of work, simply because the French, who are the great masters of freehand drawing, have generally employed it in elementary study.

Others, who use the hard point, or crayon, such as engravers and lithographers, favor the drier and severer English method, as it used to be called, on account of the firmness and accuracy which work with the hard point is supposed to give to the student's touch.

These views appear to confuse the object of study with the means, as though there were virtue in the materials used to develop appreciation and knowledge, and destroy ignorance and insensibility.

This is a radical mistake, and should be avoided and counteracted by requiring the student to practise in all mediums; thus enforcing the principle that the subject and the truth of its presentation are being studied, not the means employed or vehicle used.

The same provincialism is observable even in the choice of objects from which freehand drawing is taught; some teachers believing that only the human figure from casts or nature should be drawn by the student, ignoring the educational resources of architecture, historical ornament, landscape effects, plant and animal forms, and regular geometric solids, as subjects for study; whilst others condemn the use of all flat examples for instruction, whether they be employed to illustrate a perspective effect in line or chiaroscuro by Turner, or an immortal achievement in color, composition, or drawing by Titian, Raffaelle, or Buonarotti.

It needs only the thoughtful consideration of an experienced educator to see that such views are narrow and confused, confounding the objective result of study; viz., intellectual and artistic development of the perceptive faculties by education, independent of subject, vehicle, or method, with the processes employed in instruction, or the incidental mode and practice of a master.

That which is true of method and subject in elementary studies is also applicable to the more advanced, — painting, modelling, construction, and design.

The use of vehicles or materials should include all that are practicable and honest, and methods of work and subjects of study be intentionally catholic rather than elective, to enforce the principle that processes are secondary to the subject and its expression, and that the student must be independent of his implements, and master of all tools.

Personal preferences in the choice or use of any branch of art or vehicle for work may well be left to the time when he knows enough of all to choose intelligently and wisely, or circumstances require the employment of one; and it should never be forgotten, that, in studying and practising all, he is approaching that one in the best way.

METHOD OF TEACHING.

The most valuable service I can render to the managers of the Pennsylvania School of Industrial Art is to give them unreservedly the benefit of recent experience in a method of teaching drawing developed under my own direction and observation, under conditions which prove it to be peculiarly well adapted to normal and other public classes.

I call it the method of Class Lectures and Demonstrations, as distinguished from teaching each pupil in a class by use of a separate copy. I propose now to describe it.

Teaching the subject of *drawing* in the past has been much hindered by the practice of picture-making by pupils, — a fungus on the tree of education, robbing it of the vital forces necessary to its development and prosperity, to nourish a vain parasite.

The method by which this used to be carried out, whether in private or public schools or classes, was by use of separate flat copies in the hands of each pupil, no two subjects being the same; the teacher giving individual instruction to each pupil upon his example, either whilst sitting at a desk, the pupil visiting the teacher, or whilst peregrinating round the class-room and visiting each pupil.

It must be obvious, that, in so far as the teacher taught the subject of *drawing* and its principles to all, his instruction had to be repeated for every pupil; one pupil in practice applying those principles to the drawing of a house, another to a horse, a third to a landscape, a fourth to the human figure, and so on.

The apparent result sought was the making of *drawings*, by each pupil, pictures more or less, which is an altogether different matter from the study of drawing as a subject, irrespective of pictorial illustrations of its principles.

This was a worthless method of teaching, and its results have been proved to be of little educational value.

To take the place of such a practice I have introduced into the high schools and evening classes of the city of Boston, and in other public classes in the State of Massachusetts, a system of class instruction and demonstrations of the principles and practice of drawing by use of the blackboard or whiteboard and objects only; the teaching being given by the instructor on the platform to all the pupils at once, treating the class as an individual, explaining principles and drawing before the pupils so that all may be taught essential principles, and see the best practice in their application.

Evey pupil follows and repeats in his drawing the work of the instructor done on the board.

This is applied to all freehand subjects whether in outline or light and shade, and drawing from objects also.

In the day classes the lessons in color are also given in the same manner.

This has long since been done in teaching the elements of scientific drawing, as in geometrical and perspective subjects; but it had not been so generally applied to freehand work, save in the most elementary branches of outline.

It is in the application of the method to more advanced subjects that the advance has been made, and with the best educational results.

I claim that all public instruction in drawing can be most efficiently and most economically secured by the adoption of this method, and by it alone, and that the old method of individual instruction upon separate subjects for each pupil, whether of casts or flat copies, ought to become obsolete.

Upon the latter no one pupil ever received a sufficient amount of instruction, if he had his proper share of time to be divided between all the members of a class; whilst on the former plan every pupil will be receiving instruction during the entire lesson.

It may be safely asserted, that whatever there is in the subject of drawing, either in its principles or processes, that cannot be taught by doing the work before the whole class accompanied by oral instruction, cannot be taught to an individual, and therefore should not be attempted in public schools and classes.

But it may be asked, What subject or process is there in art education which cannot be so illustrated and done by drawing before the class, and by good oral instruction, whilst the demonstration is in progress?

I know of none. Plane and solid geometry and perspective are invariably so taught in class, and by lectures and demonstrations.

The highest branch of professional art study — that of drawing from the living human figure or nude model — is taught in class, and from one subject.

So that from the elements of science to the culminating study of art, from perspective to the human figure, the best teachers in the best schools instruct their pupils in classes from the same subject, and by giving the best possible instruction on it to all alike.

Every subject lying between these extremes, and which can be taught by one person to another, can be thus taught by a good instructor, and can be so learned by an average pupil, in class.

For these reasons, and after a patient trial of both methods, I commend the adoption of Class Instruction and Demonstrations by short exercises to teach principles and processes in drawing and coloring, in all schools and classes, and for all subjects; and the entire and unconditional abolition of picture-making or highly finished work by students, during the time of their training and education, and whilst they may be described as being *in statu pupillari.*

This is no new principle in education: it is only applying to art education the method pursued in the study of other subjects, such as language and mathematics, which are taught in class precisely as I would have drawing taught. Nor does it do away with the necessity of correcting individual mistakes, though it does enable the teacher to see where the thinking and executive powers of each pupil are weak or defective.

We have already abolished the practice of picture-making from elementary day schools, and substituted for it *instruction in drawing.*

The time has come also when we can with as much profit do the same in evening classes and schools of art, requiring only that the finished certificate or diploma works should clearly express the principles taught and processes demonstrated in an intelligent and student-like manner.

The only difficulty which stands in the way of so desirable a reform is in getting teachers thorough enough and sufficiently accomplished in executive power to do this work in the way described; and the next great achievement will be to educate them in sufficient numbers to raise the plane of art education to a higher and more practical development.

BLACKBOARD DRAWING.

Another suggestion I desire to make, and one that refers to an important practice educationally, is, that in the lower grades of instruction a definite amount of the work to be done by the students should be with chalk on blackboards, and upon a large scale.

To both teachers of public schools and workmen the ability to draw and sketch with rapidity, ease, and practical accuracy on a large scale, is of the greatest possible value; for it has been well said that the blackboard is to education what steam is to locomotion, and the draughting mechanic is always foreman of his shop.

This power can only be acquired by practice, doing the work somehow until it can be done well; and the larger the scale upon which the practice is given, the sooner will the student master its difficulties, and form a habit of drawing thoughtfully and well upon all scales.

For this reason I have suggested, that, in the work of the first grade as arranged for the Philadelphia School, one-half of the course in all the subjects should be with chalk on blackboards three feet by two feet six inches in size, each pupil to be supplied with a board; and, when the work is mechanical drawing, to be furnished also with large rulers, squares, and compasses. In the second grade one-half of the first year's course, and in the third grade one-third of the first year's course, to be so executed.

These blackboards for students should be arranged in a roomy lecture-theatre, placed on firm stands or tables, so that the students can draw upon them whilst facing the platform, and see without interruption the large board upon which the instructor works, and every step in the demonstration, as well as the casts or models placed as copies on the platform for the class to draw from.

The student's blackboard should be capable of being raised or lowered by means of vertical screws, which would also enable the boards to be all turned around to face the instructor if he wished to see the work in progress on them without leaving the platform; and they should also be convertible into ordinary flat tables when required for use in that position, or for other demonstrations.

A large lecture-theatre, fitted up with such conveniences for drawing on a mighty scale, could be used for all grades and classes, and for every kind of demonstration; but it could be used for nothing else, as the blackboards would be on fixtures to the floor, in order to secure steadiness to the touch and whilst the student is at work.

The ability to draw possessed by teachers should be developed more especially in the direction of readiness to illustrate by large diagrams on the blackboards the lessons given in their own class-rooms, with facility and practical accuracy, the principles and grammar of form. The power to correct the inaccurate work of their pupils becomes also a matter of certainty with them through such practice on a large scale.

So also with workmen and designers, this heroic practice is precisely the sort of drawing they require in the workshop and on the works.

CERTIFICATE WORKS.

For the same reason the certificate sheets of the lower grades are to be regarded as a permanent record of the course and subjects of instruction, executed with that degree of precision and with such a power of realistic expression as may be demanded by the nature of the subject for its complete understanding alike by workman and critic.

They ought also to be on a large scale, and the size of imperial paper suggested — viz., thirty inches by twenty-one inches, or thereabouts — is none too large for them. It is not intended they should be pictures, but rather records; and, if executed on stout brown or manila paper of good quality, the opportunity or temptation to make pictures of them might be thus profitably removed.

This practice on the blackboard with chalk both in freehand work and with instruments, I regard as studying the subject of drawing. The work on paper and the certificate exercises are in the same way to be considered as practice in manipulation, with materials allowing of more technical precision, and for the purpose of teaching the student how to make working drawings; the first to set his thoughts right about his work, the second to enable him to present it in practical form.

Both are of value in their several ways, though for both workmen and teachers it is infinitely more important that they should know their subjects well and present them truthfully, than that their object should be to make nice-looking drawings. We have had too much of the latter in most of the grades of instruction, though it is most offensive and impertinent on the lower grades.

I have been steadily opposing this distortion of the educational value of instruction in drawing for many years; and now there is a more healthy knowledge of the subject than was the case formerly, I hope to see these views more generally adopted; and the result will be a greater freedom of work, a better understanding of the subject, and the emancipation of students from a yoke that was grievous to be borne.

CLASS LECTURES AND DEMONSTRATIONS.

It is to be remembered, that, in carrying out this method of instruction, and in order to be of the greatest service to his pupils, the teacher must work *for* and *with* them.

Working *for* them involves the preparation by his own hand of all such diagrams and charts of exercises as are required to illustrate the subject to be drawn, and the stages of execution in the process of drawing it, so that they may be displayed before the class, and create a definite and clear understanding of what has to be done, and how it has to be done, before the work is begun.

Working *with* the student is to perform before his eyes, and slowly and deliberately enough to be followed by the class, the work which each student is expected to do; so that the mystery of a completed work thus unravelled before him, and the stages of its execution reduced to short steps, may be forever made clear to his mental vision.

Then afterwards a student may be expected to work for himself and by himself: for he will have been educated to do so; and this exercise of his powers, developed and strengthened by the method of his instruction, will prepare him for the problem of practical life, which is to solve difficulties and overcome them by knowledge, unaided and alone, if need be.

As a rule, also, the more an exercise can be begun and finished at one lesson, the better, so that one principle may be enforced, or *one* mystery be dispelled, by a single effort; each lesson to be like the blow of a steam-hammer, or the stroke of a bell, begun and done at one time, and making as definite an impression on his mind and senses.

The old-fashioned picture-making, and dawdling in muddled mystery over a long drawn-out exercise, either stunted or killed the sensitive or diffident student, involving him in all the difficulties of the mature artist whilst yet in the infancy of his perceptive powers; and it is to remove this incubus which thoughtless or ignorant teachers placed on the shoulders of beginners, that I recommend short, sharp, effective, and brilliant lessons as a remedy, giving them the bread of life and light for assimilation, instead of hanging round their necks the nether millstone.

I know that this involves having good teachers, and that they are as rare as statesmen; that it necessitates so much labor for their classes and subjects of instruction, that teachers will have little time for other work, and so be obliged to become like other earnest men who are absorbed in their professional pursuits: but if an unfettered and an untrammelled board of managers of a new art school should adopt this method of instruction, and so necessitate the creation of a race of great teachers, who are thus compelled to sacrifice every thing to their work, and concentrate their energies upon it, the world ought to be grateful; for it will be nothing less than an unmitigated public blessing by which education, art, and industry will be alike promoted and glorified.

Such teaching will require the preparation by each instructor of courses of lessons in every subject or branch of art instruction adapted to the capacities of beginners in the time available for their instruction from the commencement to the end of the period of training, and the end must be held in full view before the beginning is made.

In this work he can get no assistance from others; for such teaching as I have described cannot be studied everywhere, and the literature of art education simply does not exist.

No other branch of education is deficient of a literature or suitable text-books by competent thinkers and workers in the subject and the field; but this one is virgin soil never yet cultivated and made fruitful by a single mind capable of covering the ground practically and intellectually.

This is not an unmitigated evil; for a teacher will certainly teach those subjects and exercises the best which he has studied for a definite purpose, illustrated by examples made with his own hand, to enforce principles and convey information which he deems to be essential to a complete understanding of the subject, and its expression in a craftsmanlike and artistic style.

GRADING OF INSTRUCTION.

In the effort to be most useful to the greatest number the school must necessarily consider an important part of its work to be the education of competent teachers; for through them alone will the mass of the people be reached by the school.

The most essentially public of all public schools is the normal school, for no other affects the education of as many individuals, irrespective of their surroundings; and this is the ground upon which its managers ought to claim support for it as the most public, as well as the most economical, means of influencing and elevating the education of all persons.

This is even more true of a normal art school than of other normal schools; for the public-school teachers at present in employment should and can be reached through its classes, and those which may be taught by its students and graduates, away from the school itself.

Thus the present generation of pupils now in the schools can be reached through their teachers, which is something that other normal schools cannot secure; for they affect only the coming generations of scholars through the coming generations of teachers.

Yet, unless the children now in the schools can be taught to draw by the teachers now in the schools, the advantages sought thereby will be still longer deferred.

The same is true of the influence of trained art teachers upon public education in the present as well as the future.

They find that, when employed by a city or community, much of their work consists in teaching the teachers now in employment, a great majority of whom are likely to remain in their schools for a considerable time longer, and whose classes of pupils cannot be reached, except through the personal qualification of their teachers, to give the instruction in drawing.

If not so reached, and if teachers who have not been qualified to teach drawing during their period of training are not now by some means so prepared, a vast number of present and future pupils will never receive any instruction in the subject during their school age.

But the training of good art teachers in a normal art school, and scattering them broadcast over the land, will reach all such teachers and their pupils; and thus the school will be the fountain-head of an immediate influence for the present as well as the future.

For the same reason provision should be made for the instruction of public-school teachers in the normal art school, on a suitable grade, and given at times which are convenient; for that is a legitimate and necessary part of its work.

This leads us to the question of grading the subjects and instruction to be given in the schools; and that involves consideration of the classes and students to be provided for in it.

In such a school of art as I conceive to be most comprehensively planned for public usefulness in a great city and State, there should be provision made for four classes of students as follows: —

1. Professional students, teachers of art, and others.
2. Teachers of public schools.
3. Artisans and art workmen.
4. Technical students.

Of these, the first class would give all the daytime to study; the second, partly day and evening; the third, the evenings only; and the fourth, either day or evening, or both.

In order that the work done in the school may fit on to that done out of the school, at both extremities, — viz., that which is a preparation for it in the public schools by pupils, and that which is an application of it in teaching the public schools, technical schools and classes, and in workshops by its graduates, — the whole subject of industrial art education should be intelligently and comprehensively graded.

This is necessary to cover the ground of instruction and avoid repetition of teaching, besides economizing time, labor, and expense; for it will be found that the requisite teaching power is rare and costly, and the time to be devoted to instruction by the students is limited. Both for teachers and students it is essential that the subjects of instruction and the duration of the courses should be distinctly and definitely planned and arranged before the work is commenced, so that each may know what is being undertaken, and know what is involved thereby.

Before giving details of such a grading as I would suggest, it may be as well to see how similar work has been carried out elsewhere; and two instances, with which I am intimately acquainted, are to be found in the public-school systems of England and of Massachusetts, which shall be here briefly described.

The English Grading.

There are three grades of work in the English system of public art education, called of the first, second, and third grade.

The first grade consists of elementary instruction in the subjects of —

1. Freehand drawing from copies;
2. Freehand drawing from objects;
3. Practical (plane) geometry; —

and is confined wholly to the children in the national and other day schools.

The second grade embraces more advanced instruction in —

1. Freehand drawing from copies.
2. Freehand drawing from objects.
3. Geometrical (plane) drawing.
4. Perspective.
5. Drawing on blackboard (for teachers only).

This grade is studied in the public day schools by (*a*) the older children and by the pupil teachers; (*b*) in the general normal schools; (*c*) in the art night classes connected with mechanics and other institutes; (*d*) in the lower classes in schools of art.

The third grade is that under which the work in advanced stages of schools of art and art night classes is grouped. It is divided into twenty-three stages with subdivisions of each, comprising exercises in drawing, painting, modelling, scientific drawing, and designing, — too elaborate to be more than referred to here. (It is given in Appendix A.)

The examinations for art students (not teachers of third grade) by time exercises on this grade are in the following subjects: —

1. Anatomy.
2. Advanced perspective.
3. Architecture.
4. Design.
5. Drawing from the antique.

6. Drawing from the life.
7. Modelling ornament (design).
8. Modelling from the antique.
9. Modelling from the life.
10. Painting from still life.

The Normal Art Training School at South Kensington is also conducted on this third grade, the certificate works of the students and their examinations for certificates being of the third grade.

The certificate groups are six in number in the third grade, thus arranged: —

1. Elementary drawing, coloring, and designing.
2. Painting, styles of art and ornament.
3. The human figure, drawn and painted.
4. Modelling ornament and styles of ornament.
5. Modelling the figure.
6. Special subjects.

Only two grades of teachers' certificates are awarded by the science and art department; viz., —

The second grade, qualifying the holder to give instruction in national day schools and in art night classes, and to earn payments from the government at the examination of pupils in first and second grade in day schools, and in third grade in night classes; and —

The third grade, six in number, as above, one or more of which must be held by masters and teachers of schools of art, qualifying them for positions in all schools in subjects covered by the certificates held.

There is no certificate of the first grade.

Thus there are in the English grading three grades of work and examination, and two grades of teachers' certificates.

Grades one and two are pursued in day schools for children, and grade two in general normal schools; grades two and three in art night classes and schools of art. The teachers in both cases are certificated upon the grade in which they give instruction; whilst in the Massachusetts system, as will be seen further on, the grade of art teacher, called of the fourth grade, is more advanced than that which is studied in the schools below the normal art school.

The Massachusetts Grading.

In Massachusetts there are four grades of work in industrial drawing, called respectively the first, second, third, and fourth grades.

THE FIRST GRADE, for primary and intermediate schools, or for children between the age of five years and ten, a three-years' course, consists of —

1. Freehand drawing from copies of ornament and objects.
2. Drawing from memory.
3. Drawing from dictation or oral description.
4. Design or inventive drawing.
5. Geometrical definitions.

THE SECOND GRADE, for grammar schools, or for children from nine or ten years of age up to fifteen or sixteen years old, a six-years' course. The subjects and branches of the subject studied are arranged according to the age of pupils and class, —

1. Freehand drawing from copies of ornament and objects.
2. Freehand drawing from objects.
3. Drawing from memory, and time drawing.
4. Analysis of historic ornament and plant-form in line, from copies and nature.
5. Geometrical drawing, plane and solid.
6. Perspective.
7. Design, elementary and applied.

THE THIRD GRADE, for high schools, for youths in day schools from sixteen to nineteen years of age, for evening drawing classes and general normal schools. Subjects studied are, —

1. Geometrical drawing, plane and solid.
2. Perspective.
3. Machine-drawing and details.
4. Building construction.
5. Freehand drawing in outline of objects, ornament, and foliage, from solid, cast, and nature.
6. Shading and coloring from objects with point, stump, and brush.
7. Analysis of historic ornament from cast and colored examples.
8. Botanical analysis of plants.
9. Design applied to useful objects.
10. Memory and time drawing.

There is a slight variation in the subjects as studied in day and night schools; the former emphasizing the subject of color, the latter substituting the more scientific branches and omitting color.

The time employed is two years in evening classes, three years in high, and four in normal schools (or two in the latter when the two previous grades have been passed through).

The second year of study in the evening classes for artisans gives practice, in one of the four departments selected by the student, as follows: —

1. Freehand drawing and design applied.
2. Machine-drawing.
3. Building construction and architectural design.
4. Ship-draughting.

THE FOURTH GRADE is that pursued only in the Massachusetts State Normal Art School for professional teachers of art and scientific drawing, and by others.

It consists of the subjects and on the standard deemed necessary in the education of the teacher and others; and is arranged in the following groups, covering four years of study, when students come well prepared on the lower grades: —

GROUP A. *First year*, Elementary drawing, 24 subjects.

GROUP B. *Second year*, Form, color, and industrial design, 14 subjects.

GROUP C. *Third year*, The constructive arts, 15 subjects.

GROUP D. *Fourth year*, Sculpture and design in the round, modelling and casting, 17 subjects.

An examination in each of these groups is held, and a certificate for each awarded. All having been passed, the diploma of the school is granted, and the title of Art Master, Mass., conferred by the State Board of Education.

As the curriculum of this school has been the result of careful and patient organization, during a period of eight years of watchfulness and work, and embodies my own ideas as its author, carried into practical and somewhat successful operation, I submit its full details in Appendix B, together with that of the English school, in Appendix A, for the purpose of comparison.

The whole subject in Massachusetts, then, is arranged in four grades, and a teacher's certificate is awarded in each grade (four certificates and a diploma in the fourth grade).

Compared with the English, which has three grades and two certificates for teachers, it seems to me the Massachusetts grading is simpler and more easily understood.

The award of a teacher's certificate in each grade is also convenient, and helps to distinguish the standard of the several grades.

With reference to the standards of work required by both on these grades, the following may be regarded as a fair comparison of the two:—

English Grade.		*Massachusetts Grade.*
First	equals	First.
Second	"	Second.
		Third.
Third	"	Fourth.

The third grade of the Massachusetts scheme fills the great gap between the comparatively elementary work of the first two grades, in both cases for children and youths in day schools, and the more advanced and elaborate study of the special teacher of art and professional art student on the fourth grade.

Such an addition seemed to me to be quite necessary, and it has certainly proved to be very convenient.

It will be seen that in neither of these plans of grading is there any reference to instruction in the technical processes and applications of the knowledge of drawing, coloring, or modelling, directly to industrial art; as, for instance, in porcelain-painting, drawing on wood, and wood-engraving, modelling for terra-cotta, etc.

This belongs to a development or continuation of the subject only, and is a department which stands by itself on other grounds than those occupied by a school of art; and, though it may or may not form a part of the complete scheme as I have suggested in this paper, it is necessarily a subsequent part of it, and not the first part, and may be either omitted from or added to the curriculum as occasion may require, or be pursued altogether in a Technical school after the student has passed through the Art school.

Experience in establishing and conducting such technical classes in this country has not been propitious, for much bad work has been done in them, and very little good work; but this may have arisen from the absence of previous instruction in the general principles of drawing among the students, and is probably thus accounted for.

I have, however, sometimes thought that it would be convenient to add a fifth grade of study to the Massachusetts scheme, which should consist of two departments of technics, — one to be the application of the general knowledge given on the fourth grades, to the teaching of all the subjects in all the grades; the other to be its application to industrial design in all materials and technical processes of manufacture.

As the means to embody this development are not forthcoming, and as it seems that we are already dangerously ahead of public opinion in what has been done, this must be left for a wiser coming generation, or a more enlightened community, which can benefit by the progress already made and start from the point at which we have arrived, and thus carry on the good work to still more complete service and more thorough organizations.

Until this and other results of the pioneer action of Massachusetts shall have been developed, it would be a great step in advance if a school could be established which embodied in one organization all the good points developed by our experience.

Proposed Grading for the Pennsylvania School.

The question of aim for the school is, if I have rightly interpreted it, to give the best possible education in the elements of industrial art, so far as it is affected by drawing, painting and modelling, construction and design, irrespective of the purpose to which this education will be applied by individuals.

This question having been determined, we are brought face to face with the problem of how this can be secured by a defined scheme and organization to effect it.

It presupposes the teaching of drawing in the public day schools of the city and State as a starting-point and foundation on which to build, and then seeks to make the art element in general education permanent by the supply of good and well-trained teachers, and by the opening-up, to the art workman, of a means of technical education.

It is advisable, therefore, to lay down a definite grading of the work, or that portion of it which can be done in the school, though how much of the four grades should be carried out at present depends upon the public support given by the city of Philadelphia; for, unless the teachers in the public schools are to be taught in the school, the work will be to that degree limited.

Assuming, however, that this will be the case, the school might profitably offer instruction in the four grades; viz., the first, second, third, and fourth.

This grading may be epitomized as follows: —

GRADE.	CLASS OF STUDENT.	TIME GIVEN.	LENGTH OF COURSE.
Fourth .	Professional students, teachers of art and others	9 A.M. to 4 P.M., four days a week .	Four years.
Third .	Teachers of high and normal schools, art workmen	7 to 9 P.M., three evenings a week .	Three years.
Second .	Teachers of public schools below high schools	2 hours, afternoon or evening, twice a week . . .	Two years.
First .	Teachers of public schools below grammar schools	2 hours, afternoon or evening, once a week . . .	One year.

The same figures apply to the grade, the number of lessons per week, and the number of years through which the course runs, — a coincidence, but it happens to express that which has been found to be best after a long experience in trying many schemes, and is therefore both practical and convenient. Thus the grade for the great majority of public-school teachers, those giving instruction to pupils between the ages of five and eight, requires one lesson per week for one year, and is the first grade; whilst the grade for pupils between nine and fifteen years of age requires two lessons per week for two years, and is of the second grade.

A well-arranged school, properly officered with experienced instructors, would carry on all these grades of instruction in the same rooms, but at different periods of the day and week.

The chief need in the way of accommodation for such a comprehensive curriculum would be a spacious and well-arranged lecture-theatre, properly lighted by day and evening, to seat one hundred pupils at work, two class-lecture rooms to seat not less than fifty students in each, and studios for the study of different subjects which require individual and special instruction or practice, examples, or lighting; lastly the corps of instructors under a competent director.

Since I undertook to write this paper, a master of the school now in existence has been appointed, and in the course of the discharge of his duties he has arranged a plan of instruction for the school to cover the subjects of A, drawing, B, painting, and C, modelling, — a three-years' course based on the Massachusetts Normal Art School of fourth grade, but omitting one group called that of the "constructive arts," embracing the purely scientific studies, which are in my opinion a most essential part of any scheme of industrial drawing, — viz., descriptive geometry, machine-drawing; architectural design (all advanced stages); topographical drawing, ship-draughting, etc., — but which, if added as a fourth year's course, under the name of D construction, would carry out my plan so far as one of the grades is concerned; viz., the fourth. (See Appendix C.)

I feel to some extent embarrassed by having to discharge this part of the work given to me under the somewhat altered circumstances, lest the scheme I suggest be regarded as an infringement on his authority and duty, or appear in any way to reflect on his competency, both of which I have every reason to avoid, and would here like to state that the plan of study and grading was made before his appointment.

My work cannot, however, be considered as having been accomplished unless the whole scheme of industrial art education of all grades, which is so important a part of it, be formulated in detail.

It is, I am aware, because of my pioneer experience in this branch of education, that advice has been sought from me; and in rendering it the practical fruits of that experience, both in avoiding mistakes and in taking advantage of proved successes, ought to be embodied in my reply.

Being cognizant, also, that the school has not yet undertaken work in the lower grades, and knowing the great value to the public of that phase of a normal art course, I have submitted a programme of studies in those grades very fully, and in the highest grade, as though the present school was not in existence, being of opinion, that, to be of practical service to the trustees, this paper should be complete in itself, without reference to other documents.

This programme is presented, as it might be used, for the prospectus or circular of a school, having in its details three distinct features; viz., —

1st, Diary of class-work, lectures, and demonstrations.

2d, Subjects of certificate exercises, showing courses of instruction.

3d, Examinations for certificates.

GRADING OF STUDY,

PROPOSED FOR THE PENNSYLVANIA SCHOOL OF INDUSTRIAL ART, PHILADELPHIA.

FIRST GRADE.

COURSE OF INSTRUCTION IN INDUSTRIAL DRAWING OF THE FIRST GRADE FOR TEACHERS AND OTHER ADULTS.

Length of Course. — One year of forty weeks' duration.

Length of Lesson. — Two hours, one lesson in each week.

By class lectures and demonstrations on blackboard, and from objects. Instructor and students to draw entirely with chalk on blackboard during the first two terms; students to draw on paper afterwards.

First Term of Ten Weeks, Twenty Hours.

LESSONS.	HOURS.	SUBJECTS TAUGHT.
Nos. 1 to 5 inclusive . .	First .	Geometrical definitions, plane and solid, by freehand.
	Second .	Drawing from dictation, lines, figures, forms, solids, by freehand.
Nos. 6 to 10 inclusive . .	First .	Geometrical problems, plane, constructed by instruments.
	Second .	Elementary design, inventive drawing, by freehand and instruments.

Second Term of Ten Weeks, Twenty Hours.

Nos. 11 to 15 inclusive . .	First .	Freehand of ornament and objects from blackboard and flat.
	Second .	Freehand of fruits, leaves, and common objects, from object or round.
Nos. 16 to 20 inclusive . .	First .	Botanical analysis, from board, of growing plant.
	Second .	Freehand of historic ornament from board or cast.

Third Term of Ten Weeks, Twenty Hours.

LESSONS.	DRAWINGS.	INSTRUMENTAL DRAWING.
Nos. 21 and 22 .	No. 1 .	Geometrical definitions, plane and solid, on certificate sheets, 30 by 21, with charcoal and crayon.
Nos. 23 and 24 .	No. 2 .	Blackboard and dictation exercises.
Nos. 25 and 26 .	No. 3 .	Elementary designs, inventive.
Nos. 27 and 28 .	No. 4 .	Examples for teaching drawing in primary schools.

Fourth Term of Ten Weeks, Twenty Hours.

LESSONS.	DRAWINGS.	FREEHAND DRAWING.
Nos. 29 and 30 .	No. 5 .	Freehand copy of ornament on board.
Nos. 31 and 32 .	No. 6 .	Object-drawing from board and solid.
Nos. 33 and 34 .	No. 7 .	Botanical analysis of growing plant.
Nos. 35 and 36 .	No. 8 .	Historic ornament in three styles.

Examination for Certificate, Time Drawing.

LESSONS.	HOURS.	FIRST GRADE.
No. 37 . .	First .	Freehand drawing of ornament, from copy, on paper.
	Second .	Freehand drawing of ornament, from copy, on blackboard.
No. 38 . .	First .	Freehand drawing of objects, from object, on paper.
	Second .	Freehand drawing of objects, from object, on blackboard.
No. 39 . .	First .	Drawing from dictation, exercise on paper.
	Second .	Drawing from dictation, exercise on blackboard.
No. 40 . .	First .	Geometrical drawing, problems on paper.
	Second .	Geometrical drawing, problems on blackboard.

The exercises on the blackboard to be drawn on the full size of the lecture exercises; those on paper to be as large as the examples on the certificate sheets, and, like them, drawn with charcoal. Crayon may be used for finishing at the option of the student. Size of blackboard for students, three feet by two feet six inches; size of paper, thirty inches by twenty-one inches.

SECOND GRADE.

COURSE OF DRAWING OF THE SECOND GRADE FOR TEACHERS AND OTHERS.

Length of Course. — Two years of forty weeks' duration.

Length of Lesson. — Two hours, two lessons in each week.

By class lectures and demonstrations on blackboard, and from objects. Alternate lessons in every subject to be worked by students on the blackboards (size, three feet by two feet six inches) and on paper (thirty inches by twenty-one inches).

FIRST YEAR OF SECOND GRADE.

First Term of Ten Weeks, Forty Hours.

Lessons Weekly.	Hours.	Subjects taught.
No. 1	First	Geometrical problems, plane.
	Second	Geometrical problems, solid.
No. 2	First	Freehand drawing, historical ornament, one example, ancient styles.
	Second	Botanical analysis, one plant, arrangement of leaves on stems.

Second Term of Ten Weeks, Forty Hours.

No. 1	First	Perspective, instrumental, parallel, one vanishing point.
	Second	Perspective, freehand, model-drawing of geometric solids, cone and cylinder, and objects based on them from board.
No. 2	First	Freehand drawing, historic ornament, one example, mediæval styles.
	Second	Botanical analysis, shapes of leaves, flowers, and fruit.

Third Term of Ten Weeks, Forty Hours.

No 1	First	Perspective, instrumental, angular, two vanishing points.
	Second	Perspective, freehand, model-drawing of geometric solids, objects bounded by planes, cube, prism, pyramid.
No. 2	First	Elementary design, inventive drawing, rosettes and borders.
	Second	Applied design, borders on terra-cotta, porcelain, etc.

Fourth Term of Ten Weeks, Forty Hours.

Lessons Weekly.	Hours.	Subjects taught.
No. 1	First	Perspective, instrumental, oblique, three vanishing points
	Second	Perspective, freehand, model-drawing of geometric solids, skeleton cube, frames, rings, etc.
No. 2	First	Review of whole course, problems and exercises in each subject.
	Second	Examination exercises and time drawings for certificate.

CERTIFICATE WORKS.—FIRST YEAR OF SECOND GRADE.

[On sheets, thirty inches by twenty-one inches.]

Instrumental Drawing.

1. Problems in plane and solid geometry.
2. Problems in parallel, angular, and oblique perspective.
3. Exercises in freehand for blackboard and dictation.

Freehand Drawing.

4. Model and object drawing, — separate solids.
5. Ornament and objects, two dimensions in stages of work.
6. Historic ornament, — examples of ancient and mediæval styles.
7. Botanical analysis, — shapes of leaves, flowers, and fruit.
8. Elementary designs, — one from natural leaf, one from historic ornament.
9. Applied designs, for flat surfaces.

EXAMINATION FOR CERTIFICATE. — FIRST YEAR OF SECOND GRADE.

First Hour. — Freehand drawing of ornament from copy.

Second Hour. — Freehand drawing of objects from solid.

Third Hour. — Geometrical drawing, plane and solid, with instruments.

Fourth Hour. — Perspective drawing, parallel, angular, and oblique, with instruments.

Fifth Hour. — Perspective drawing, parallel, angular, and oblique, with instruments.

Sixth Hour. — Memory drawing of an original design.

Seventh Hour. — Botanical analysis of a growing plant.

Eighth Hour. — Freehand drawing of historic ornament from memory.

In this examination the exercises Nos. 1, 2, 3, 4, are to be worked with chalk on the blackboard, the remainder on paper. With the exception of No. 2, all are to be from memory. Each board exercise is to be on the scale used at the lectures, and the paper exercises on that of the certificate works. Those on paper to be worked with charcoal or soft crayon.

SECOND GRADE.

SECOND YEAR OF SECOND GRADE.

[All the exercises to be worked on certificate sheets, thirty inches by twenty-one inches.]

First Term of Ten Weeks, Forty Hours.

WEEKLY LESSONS.	HOURS.	SUBJECTS TAUGHT.
No. 1 .	First .	Geometrical problems, plane and higher curves.
	Second .	Solid geometry, plans, elevations, sections, intersections, developments.
No. 2 .	First .	Freehand drawing, historic ornament, parallel of three styles.
	Second .	Botanical analysis, plant from nature, conventionalism.

Second Term of Ten Weeks, Forty Hours.

No. 1 .	First and second .	Perspective, instrumental, parallel, angular, oblique, and theory.
No. 2 .	First and second .	Perspective, freehand, model-drawing, groups of objects, furniture, half-tinted.

Third Term of Ten Weeks, Forty Hours.

No. 1 .	First and second .	Elementary design, freehand from growing plants.
No. 2 .	First and second .	Applied design, original exercises for objects in various materials.

Fourth Term of Ten Weeks, Forty Hours.

WEEKLY LESSONS.	HOURS.	SUBJECTS TAUGHT.
No. 1 .	First and second .	Review — Freehand, ornament, and objects, botanical analysis, design, dictation, memory, geometry, and perspective.
No. 2 .	First and second .	Examination for certificate and diploma of second grade.

CERTIFICATE WORKS.—SECOND YEAR OF SECOND GRADE.

[On sheets, thirty inches by twenty-one inches.]

Instrumental Drawing.

1. Problems in plane and solid geometry.
2. Problems in parallel, angular, and oblique perspective.
3. Design for freehand and dictation exercises and elementary designs.

Freehand Drawing.

4. Model and object drawing, — group of geometric solids and furniture.
5. Ornament in outline from casts, showing stages of work.
6. Historic ornament, — analysis of three styles.
7. Botanical analysis of plant from nature, — in flower.
8. Applied design in four materials, — original.
9. Original illustrations for teaching above branches of drawing.

EXAMINATION FOR CERTIFICATE AND DIPLOMA OF SECOND GRADE.

The examination exercises used for the first certificate of second grade, to be worked by students of the second year of second grade, to review previous work.

A second set of papers on the same subjects, but using more advanced problems and exercises, to cover the ground of the second year's course, to be then worked by the diploma students ; the same conditions and proportions of exercises to be done on the blackboard and paper, to be observed in both years' examinations.

Eight hours required for the examination of second year in second grade, the same as in that of the first year of second grade.

THIRD GRADE.

COURSE OF INSTRUCTION IN INDUSTRIAL DRAWING OF THE THIRD GRADE, FOR TEACHERS OF HIGH AND NORMAL SCHOOLS, ART WORKMEN AND OTHER ADULTS, AND YOUTHS ABOVE SIXTEEN YEARS OF AGE.

Length of Course. — Three years, each of thirty weeks' duration.

Length of Lesson. — Two hours, three lessons in each week.

By class lectures and demonstrations on blackboard, and from objects.

Every third lesson in every subject to be worked by the students on the blackboards (size, three feet by two feet ten inches), the next on paper (size, thirty inches by twenty-one inches).

FIRST YEAR OF THIRD GRADE.

First Term of Ten Weeks, Sixty Hours.

Weekly Lessons.	Hours.	Subjects taught.
Monday	7½ to 8½.	Geometric drawing, plane and solid, orthographic, isometric.
	8½ to 9½.	Perspective, parallel, angular, oblique, and theory.
Wednesday	7½ to 8½.	Freehand object-drawing, from board, half-tint.
	8½ to 9½.	Freehand object-drawing, from solid, half-tint.
Friday	7½ to 8½.	Object-drawing, shading with stump, from white-board.
	8½ to 9½.	Object-drawing, shading with stump, from solid.

Second Term of Ten Weeks, Sixty Hours.

Monday	7½ to 8½.	Machine-drawing, details and construction.
	8½ to 9½.	Machine-drawing, details and construction.
Wednesday	7½ to 8½.	Freehand historic ornament, blackboard and cast.
	8½ to 9½.	Botanical analysis, from blackboard and cast.
Friday	7½ to 8½.	Elementary design, working out designs.
	8½ to 9½.	Applied design, principles and exercises.

Third Term of Ten Weeks, Sixty Hours.

Weekly Lessons.	Hours.	Subjects taught.
Monday .	7½ to 8½ .	Building construction, details masonry, carpentry.
	8½ to 9½ .	Building construction, details masonry, carpentry.
Wednesday	7½ to 8½ .	Freehand drawing of objects, shading with point, from whiteboard and objects.
	8½ to 9½ .	Freehand drawing of objects, shading with point, from whiteboard and objects.
Friday .	7½ to 9½ .	Review and examination for certificate.

CERTIFICATE WORKS.—FIRST YEAR OF THIRD GRADE.

[On sheets, thirty inches by twenty-one inches.]

Instrumental Drawing.

1. Geometrical drawing, plane and solid, orthographic and isometric.
2. Perspective, parallel, angular, and oblique, one problem in each.
3. Machinery details.
4. Building construction; details of masonry and carpentry.

Freehand Drawing.

5. Geometric solids, from board and object, in outline and half-tint.
6. Geometric solids, from board and object, shading with stump and point.
7. Historic ornament, from whiteboard and cast, three styles, with stump.
8. *Botanical analysis of a growing plant, with two designs.
9. *Elementary design, two examples, outline and half-tint.
10. *Applied design in four different materials.

EXAMINATION FOR CERTIFICATE.—FIRST YEAR OF THIRD GRADE.

The subjects of examination to be the same as those of the ten certificate works, one hour given to each subject. Exercises Nos. 1, 2, 5, 8, to be worked with chalk on the board, the remainder on paper. The blackboard exercises to be of the same scale as that used at the lectures; the paper work, on the scale of the certificate works.

* Instruments used to secure accuracy of arrangement.

THIRD GRADE.

SECOND YEAR OF THIRD GRADE.

[All the exercises to be worked on certificate sheets, thirty inches by twenty-one inches.]

First Term of Ten Weeks, Sixty Hours.

WEEKLY LESSONS.	HOURS.	SUBJECTS TAUGHT.
Monday	7½ to 8½.	Shadows, orthographic, isometric.
	8½ to 9½.	Perspective, shadows and reflections.
Wednesday	7½ to 8½.	Shading from model and cast, historic ornament, stump.
	8½ to 9½.	Shading from model and cast, historic ornament, stump.
Friday .	7½ to 9½.	Shading from cast, details of human figure, point.

Second Term of Ten Weeks, Sixty Hours.

Monday .	7½ to 9½.	Machine-drawing, wheels, screws, models.
Wednesday.	7½ to 9½.	Shading from cast of animal figures, brush.
Friday	7½ to 8½.	Elementary design, botanical analysis.
	8½ to 9½.	Applied design, surface, woven, sculptured.

Third Term of Ten Weeks, Sixty Hours.

Monday .	7½ to 9½.	Building construction, designs for houses.
Wednesday.	7½ to 9½.	Design, principles and practice, same subject used for several materials.
Friday .	7½ to 9½.	Review and examination for certificate.

CERTIFICATE WORKS.—SECOND YEAR OF THIRD GRADE.

[On sheets, thirty inches by twenty-one inches.]

Instrumental Drawing.

1. Shadows, orthographic and isometric.
2. Perspective shadows and reflections.
3. Machine-drawing from measurement.
4. Building construction, design.

Freehand Drawing.

5. Shading from cast of ornament, with stump.
6. Shading from cast of human figure, with point.
7. Shading from cast of animal form, with brush.
8. *Botanical analysis of plant.
9. *Elementary design, two examples.
10. *Applied design.

* Instruments to be used also.

EXAMINATION FOR CERTIFICATE.—SECOND YEAR OF THIRD GRADE.

Instructions for the examination of the first year to be applied to that for the second year, the exercises being designed to suit the advanced stages and new subjects. Students to work out the papers of the first year's course as a preliminary examination to that of the second year, and then take up those of the second year.

THIRD GRADE.

THIRD YEAR OF THIRD GRADE.

[All drawings to be worked on certificate sheets, thirty inches by twenty-one inches.]

First Term of Ten Weeks, Sixty Hours.

WEEKLY LESSONS.	HOURS.	SUBJECTS TAUGHT.
Monday .	7½ to 9½ .	Descriptive geometry, intersections.
Wednesday .	7½ to 9½ .	Anatomy, human and comparative.
Friday .	7½ to 9½ .	Figure-drawing, head from antique, with point and stump; draped figure from cast.

Second Term of Ten Weeks, Sixty Hours.

Monday .	7½ to 9½ .	Topographical drawing, land-surveying.
Wednesday .	7½ to 9½ .	Structural botany, plant-form in light and shade.
Friday .	7½ to 9½ .	Figure-drawing, head from nature, point, stump, brush; draped figure in costume.

Third Term of Ten Weeks, Sixty Hours.

Monday .	7½ to 9½ .	Ship-draughting.
Wednesday .	7½ to 9½ .	Applied design, from good examples and originals.
Friday .	7½ to 9½ .	Examination for certificate and diploma of third grade.

CERTIFICATE WORKS.—THIRD YEAR OF THIRD GRADE.

[On sheets as above.]

Instrumental Drawing.

1. Intersections.
2. Map of an estate.
3. Plan and section of boat.

Freehand Drawing.

4. Head from antique, with stump.
5. Head from nature, with point or brush.
6. Botanical analysis of plant, tinted.
7. The skeleton and muscles, shaded.
8. Applied design, four examples, each for a different material, using the same subject.

EXAMINATION FOR CERTIFICATE AND DIPLOMA OF THIRD GRADE.

For Certificate.—One hour to be devoted to answering questions and sketching illustrations on each of the eight certificate subjects. Nos. 1, 2, 6, 7, to be drawn on the blackboard, the rest on paper.

For Diploma.—Four hours to be given to papers on the first year's course, and four hours to the second year's subjects. This review, and the certificate examination on the third year's course, completes the diploma examination. Blackboard and paper work to be on the scale of the lectures and certificate works.

FOURTH GRADE.

COURSE OF INSTRUCTION IN INDUSTRIAL ART EDUCATION OF THE FOURTH GRADE, FOR PROFESSIONAL STUDENTS, TEACHERS OF ART, DESIGNERS, AND OTHERS ABOVE SIXTEEN YEARS OF AGE.

Length of Course. — Four years, each of forty weeks' duration.

Daily Work. — Six hours, four days in each week.

By class lectures and demonstrations on black and white boards, and from objects. Time sketching and examinations.

FIRST YEAR'S COURSE OF FOURTH GRADE.

A.—ELEMENTARY DRAWING AND DESIGN.

First Term of Twenty Weeks.

Days.	Hours.	Exercises.	Subjects of Instruction.
Monday .	9 to 11 .	Lecture . .	Object-drawing, geometric solids, furniture in outline.
	11 to 1 .	Demonstration .	Processes of shading object, — point and stump.
	2 to 4 .	Lecture . .	Geometrical drawing and perspective, alternate.
Tuesday .	9 to 1 .	Class-work .	Outline-drawing, — ornament and animal from cast.
	2 to 4 .	Lecture . .	Orthographic and isometric projection.
Thursday .	9 to 1 .	Class-work .	Shading from objects, geometric solids, and casts of ornament.
	2 to 4 .	Lecture . .	Machine-drawing and building construction, alternate.
Friday .	9 to 12 .	Class-work .	Painting in water-color (monochrome) from casts.
	12 to 1 .	Lessons in stenography . .	Shorthand writing, for reporting lectures.
	2 to 4 .	Lecture . .	Color, historic ornament, applied design, alternate.

Second Term of Twenty Weeks.

Days.	Hours.	Exercises.	Subjects of Instruction.
Monday .	9 to 1 .	Class-work .	Human figure from casts, foliage from nature, outline.
	2 to 4 .	Lecture . .	Perspective, practice and theory, parallel, angular, and oblique.
Tuesday .	9 to 1 .	Class-work .	Shading from casts of ornament, — point and stump.
	2 to 4 .	Lecture . .	Projection of shadows, orthographic, isometric.
Thursday .	9 to 1 .	Class-work .	Shading from casts of ornament, — point and stump.
	2 to 4 .	Lecture . .	Machine-drawing and building construction, alternately.

Second Term of Twenty Weeks — Continued.

Days.	Hours.	Exercises.	Subjects of Instruction.
Friday	9 to 12	Class-work	Painting flowers and objects, still life, from colored copies, water-color.
	12 to 1	Lessons in stenography	Shorthand writing, for reporting lectures.
	2 to 4	Lecture	Botanical analysis and applied design, alternate.

Lecture exercises worked alternately on blackboard and paper.

At the end of each month the lecture exercises wrought by each student are to be presented in book-form to the instructor, who will correct and mark and return them.

An average of fifty per cent of marks on all subjects must be obtained to qualify the student for the certificate examination.

CERTIFICATE WORKS.

[Size of works, thirty inches by twenty-one inches.]

Instrumental Drawing.

1. Geometric problems, plane and solid; orthographic.
2. Isometric projection, and projection of shadows; isometric and orthographic.
3. Perspective, parallel, angular, and oblique, with plans and elevations.
4. Building construction, and details of machinery.

Freehand Drawing.

5. Object-drawing, — Geometric solids, two groups; pencil outline, shaded with point.
6. Object-drawing, — Geometrical and other solids, two groups; stump and monochrome, water-color.
7. Outline drawing, two subjects; ornament from cast, foliage from nature.
8. Outline drawing, two subjects; human figure from copy, animal form from cast.
9. Cast-drawing, two studies of ornament, with point and brush, monochrome, in water-color.
10. Design, two studies, elementary in monochrome, applied in color, — surface.
11. Color studies, from copies of foliage or still life, and from historic ornament.
12. Botanical analysis from growing plant; four designs in different materials from it.

[Pass marks, 50 to 70; good, 70 to 85; excellent, 85 to 100.]

EXAMINATION FOR CERTIFICATE.

Papers on the twelve groups covered by the certificate works, giving exercises and problems in each subject, and medium used, each paper having reference also to the courses of lectures or class instruction given; two hours allowed for every paper or exercise. The whole of the last week in the annual session to be devoted to the work of examination. The titles of the certificate works form the subjects of examination, based also on the courses of lectures.

Students must obtain an average of fifty per cent in all papers to pass the examination.

FOURTH GRADE.

SECOND YEAR'S COURSE OF FOURTH GRADE.

B.—ELEMENTARY PAINTING AND DESIGN.

First Term of Twenty Weeks.

Days.	Hours.	Exercises.	Subjects of Instruction.
Monday	9 to 1	Demonstration	Painting in oil (monochrome) from cast.
	2 to 4	Time sketch	Water-color (monochrome) and charcoal, alternate, from cast.
Tuesday	9 to 1	Class-work	Painting in oil (monochrome) from cast.
	2 to 4	Lecture	Anatomy, human and comparative; skeleton and muscles.
		(Alternately)	Perspective, aërial; shadows and reflections; theory.
Thursday	9 to 1	Class-work	Painting in water-colors from nature, still life.
	2 to 4	Time sketch	Water-color, objects and still life.
Friday	9 to 12	Class-work	Painting in water-colors and tempera.
	12 to 1	Lecture	Stenography, reporting given lectures and illustrative sketches.
	2 to 4	Lecture (Alternately) Demonstration	Applied design, surface ornament, printed, woven, dyed. Chemistry, inorganic.

Second Term of Twenty Weeks.

Days.	Hours.	Exercises.	Subjects of Instruction.
Monday	9 to 1	Class-work	Painting in oil-colors from nature, group, and objects.
	2 to 4	Time sketch	Oil-color, objects, still life.
Tuesday	9 to 1	Class-work	Painting in oil-colors from nature, group, and objects.
	2 to 4	Lecture	Anatomy, head and facial expression, hand.
		(Alternately)	Perspective, aërial; shadows, reflections, practice.
Thursday	9 to 1	Class-work	Drawing and painting human figure from antique and life.
	2 to 4	Time sketch	Water-colors, objects and still life, charcoal, alternate.
Friday	9 to 12	Class-work	Drawing and painting human figure from antique, nude; life, draped.
	12 to 1	Lecture	Stenographic report of lectures illustrated.
	2 to 4	Lecture (Alternately) Demonstration	Applied design, constructional, engraved glazes, etc. Chemistry, inorganic.

The two sketches examined and marked each week. Students must obtain an average of fifty per cent on the whole, to be qualified for certificate examination. An examination reviewing the lectures held monthly, partly by paper exercises, and partly *vivâ voce.*

CERTIFICATE WORKS.

[Size of works, to be thirty inches by twenty-one inches.]

Drawings.

1. From antique figure, with stump or point, or monochrome water-color.
2. Skeleton of same, etched with ink.
3. Muscles of same, in light and shade or color.
4. Study from living model, draped; light and shade, stump.

Painting in Water-Colors.

5. Flower and foliage from nature, grouped without background.
6. Still life and objects from the round, grouped with background.
7. Landscape-painting from nature, or approved example.
8. Head from nature, or full-length draped figure.
9. Aërial perspective; shadows and reflections in monochrome.
10. Ornament or arabesque in tempera.

Paintings in Oil.

11. Monochrome from cast of human figure subject.
12. Group as composition of form and color; objects and still life.

Designs.

Designs drawn and colored for, — 1. Porcelain breakfast and dinner service. 2. Wall-paper. 3. Ceiling decoration. 4. Carpet. 5. Cotton print. 6. Table-cloth and window hangings. 7. Lace. 8. Book illustration.

Two designs, full-size details, and general drawing to scale.

EXAMINATION FOR CERTIFICATE.

Practice.

1. Time sketch in oil from group of objects and still life. Four hours.
2. Monochrome study in oil from cast of ornament. Four hours.
3. Time sketch in water-colors, group of objects and still life. Four hours.
4. Head from nature, in water-color. Four hours.

Theory.

5. Paper on chemistry and analysis of pigments.
6. Paper on perspective, shadows and reflections.
7. Paper on anatomy, human and comparative.
8. Paper on applied design, with exercises.

Time allowed for theory papers, two hours each.

The last week of the annual session will be occupied by the certificate examination; and students must receive a minimum of pass marks in all the exercises (fifty) to obtain the certificate. No averaging of marks allowed in this class, or in any subsequent to it, except on a higher standard than that of fifty per cent.

FOURTH GRADE.

THIRD YEAR'S COURSE OF FOURTH GRADE.

C.—CONSTRUCTION AND DESIGN.

First Term of Twenty Weeks.

DAYS.	HOURS.	EXERCISES.	SUBJECTS OF INSTRUCTION.
Monday	9 to 1	Class-work	Architectural drawing; building from measurements.
	2 to 4	Lecture	Building construction; lighting, heating, ventilation.
Tuesday	9 to 1	Class-work	Architectural drawing; details of building from measurement.
	2 to 4	Lecture (Alternately) Time sketch	Styles of architecture and ornament; design in the round for ornamentation of buildings externally and internally.
Thursday	9 to 1	Class-work	Advanced machine-drawing and details; construction.
	2 to 4	Lecture	Land-surveying, bridge-building, forestry.
Friday	9 to 1	Class-work	Ship-draughting.
	2 to 4	Lecture	Descriptive geometry, projection of shadows, intersections.

Second Term of Twenty Weeks.

DAYS.	HOURS.	EXERCISES.	SUBJECTS OF INSTRUCTION.
Monday	9 to 1	Class-work	Architectural drawing; design for building, conditions given.
	2 to 4	Lecture (Alternately) Time sketch	Styles of ornament and applied design; various materials. In clay of ornament for exterior of buildings.
Tuesday	9 to 1	Class-work	Architectural drawing and design for building.
	2 to 4	Lecture	Specifications, quantities, strength of. materials.
Thursday	9 to 1	Class-work	Topographical drawing, surveys.
	2 to 4	Lecture (Alternately) Time sketch	Bridge-building, tunnelling, fortification. Landscape features in pencil and color.
Friday	9 to 1	Class-work	Chemistry, inorganic and organic.
	2 to 4	Lecture	Geology, mineralogy.

Time sketches examined and marked weekly. Lecture exercises examined and marked monthly. The average marks at the end of the year must equal fifty per cent on the whole to entitle the student to the certificate examination.

CERTIFICATE WORKS.

[Size of works, thirty inches by twenty-one inches.]

Architectural Design and Building Construction.

1. Building from measurement of structure, with details.
2. Design for house or public building, — plans, elevation, and perspective.
3. Details on large scale of the design in No. 2.
4. Monograph of styles in architecture and ornament.

Machine-Drawing.

5. Plan, elevation, and section of locomotive or stationary engine. Copy.
6. Drawing from measurement of a machine.
7. Details of machinery, screws, wheels, and gearing.
8. Ship-draughting. Two views and section of boat or vessel.

General Mechanical Drawing.

9. Intersections, developments, shadows, tinted.
10. Bridge-construction.
11. Isometric view of a building or machine.
12. Topographical drawing, survey of an estate.

Designs.

Designs drawn and colored for, — 1. Capital, or enriched moulding stone. 2. Cornice, or internal moulded decoration. 3. Metal-work, gates, crestings. 4. Open fireplace, using tiles and metal. 5. Floors inlays, tiles, or marquetry.

Three designs to scale, or part full size, with working drawings.

EXAMINATION FOR CERTIFICATE.

Building Construction.

Design.

1. Design for a building to suit a given site. Plans, elevations, sketches. Six hours.
2. Specifications for design No. 1. Four hours.
3. Time sketch in clay, student's own design. Two hours.
4. Styles of architecture and ornament. Four hours.

Machine-Drawing.

5. Drawing from measurement of a machine. Four hours.
6. Details of machinery and movements. Four hours.
7. Details of bridge-construction. Four hours.

General Instrumental Drawing.

8. Topographical drawing from data. Two hours.
9. Ship-draughting. Design to conditions. Six hours.

Other Subjects.

10. Chemistry, inorganic and organic. Four hours.
11. Forestry, — strength of materials. Two hours.
12. Topographical sketch from nature. Six hours.

The last week in each term, or the last fortnight in the annual session, will be devoted to the examination for certificate. Students must receive an average of seventy-five per cent of marks in the papers to pass the examination; and two papers below fifty per cent to be considered as failure.

FOURTH GRADE.

FOURTH YEAR'S COURSE OF FOURTH GRADE.

D.—SCULPTURE AND DESIGN.

First Term of Twenty Weeks.

DAYS.	HOURS.	EXERCISES.	SUBJECTS OF INSTRUCTION.
Monday .	9 to 1 .	Class-work .	Modelling ornament from casts.
	2 to 4 .	Time sketch .	In clay, from flat copies and casts of ornament.
Tuesday .	9 to 1 .	Class-work .	Modelling animal form and foliage from cast and nature.
	2 to 4 .	Lecture . .	Design applied, carving wood, stone, metal, cast and wrought.
Thursday .	9 to 1 .	Class-work .	Modelling designs for wood-carving, metal, terra-cotta.
	2 to 4 .	Time sketch .	Human figure, from cast, in charcoal and monochrome.
Friday .	9 to 1 .	Class-work .	Modelling details of human figure,—feet, hands, and masks.
	2 to 4 .	Demonstration .	Casting in plaster, wax, gelatine, sulphur, in order.

Second Term of Twenty Weeks.

DAYS.	HOURS.	EXERCISES.	SUBJECTS OF INSTRUCTION.
Monday .	9 to 1 .	Class-work .	Modelling ornament from prints and designs.
	2 to 4 .	Time sketch .	In clay: human figure and animal form, busts and statuettes.
Tuesday .	9 to 1 .	Class-work .	Modelling whole human figure and animal form from prints.
	2 to 4 .	Demonstration .	Anatomy: dissection of human subject.
Thursday .	9 to 1 .	Class-work .	Modelling human figure from antique and life; heads.
	2 to 4 .	Time sketch .	Full-length draped human figure from life, charcoal.
Friday .	9 to 1 .	Class-work .	Modelling human figure from antique, nude; and life, draped.
	2 to 4 .	Demonstration .	Preparation of clay-work for terra-cotta, wax for silver moulding, etc.

The time sketches are marked every week, and their character discussed and criticised before the students. Records of marks must show an average of eighty per cent on these weekly exercises, and on a minimum of thirty weeks of the session for graduating students.

CERTIFICATE WORKS.

[Size of works, relievos, thirty inches by twenty-one inches, or in round.]

Ornament.

1. Historical ornament from cast.
2. Ornament from flat copy, print, photograph, etc.
3. Design, full size for external building decoration, for terra-cotta.

Animal Form.

4. Statuette of animal from print or nature.
5. Grotesque design, animal form introduced, for terra-cotta.
6. Head, life-size, of animal from nature.

Human Figure.

7. Bust, full size, from antique.
8. Bust, full size, from nature.
9. Section of bas-relief, from Elgin marbles, reduced.
10. Statuette from antique, anatomized.
11. Alto-relievo from print or cartoon, prepared for terra-cotta.
12. Original design, introducing the human figure.

Drawings for Designs.

Designs in color of object for, — 1. Cast or wrought iron enrichment. 2. Terra cotta, stone or marble carving. 3. Wood-carving. 4. Metal-work, gold or silver. 5. Object and its sculptured ornament.

Four of the five designs to be completed during the year.

Casting.

One example of each kind of moulding from students' models; viz., plaster waste, safe, wax, gelatine, sulphur.

EXAMINATION FOR CERTIFICATE.

Practice.

1. Rendering in clay a design from print or photograph; three hours. Cast of same; three hours.

2. Relievo from the antique, full length; four hours. Anatomizing the same; two hours.

3. Portrait bust from nature. Six hours.

4. Charcoal study from living model. Four hours.

5. Casting from nature of hand or leaf. Two hours.

Theory and Sketching.

6. Paper and sketches, — historical sculpture human figure. Four hours.

7. Anatomy, — sketches from memory of dissections. Two hours.

8. Applied design, — examples from memory of good work in terra-cotta or stone, iron work, and wood. Four hours.

9. Applied design, — exercise on given subject. Two hours.

10. Review work of Classes A and B, time sketches. Six hours.

11. Review work of Class C, paper work. Six hours.

The graduating students must devote the last fortnight of the annual session to examination for certificate and diploma.

Every exercise and paper must receive a minimum of seventy-five per cent of marks to qualify for graduation.

In arranging these courses of instruction for all the grades, I have taken advantage of a practical knowledge of European schools and systems, as well as the ten years of experience in this city and State, during which time I have become well acquainted with the circumstances under which the subject of industrial drawing has to be developed in this country.

The programmes, though not exactly like any yet carried out here, are intended to remedy defects, and mature successful features which have been developed by, or have borne the test of, trial here or elsewhere.

I have also had in mind the memorial of the Philadelphia Teachers' Institute, referred to in a supplemental report on p. 19 of the Report of the Board of Trustees of the Pennsylvania Museum and School of Industrial Art for the year 1879.

This memorial asks for free instruction for the teachers of the public schools, for their examination and the award of certificates to those who pass, and on four grades of instruction.

It will be seen, therefore, that my plan, prepared before this memorial was presented, exactly provides for the instruction petitioned for, though its details have been somewhat modified, in view of recent experience, to perfect the grading of the subject, and for a school which contemplates the instruction of others besides the public-school teachers.

I have suggested nothing in any grade that I have not either carried out myself, or had carried out by others under my direction, thus testing the practical character of my work before suggesting its adoption in an important new school.

Each of these grades of work has been practically carried out in different schools or institutions, without the unity or strength of continuity that would result from their being all carried on in one school devoted entirely to that purpose, and to that alone.

But I anticipate an altogether greater success and results on a higher plane of attainment should you put this scheme of work in operation in its entirety and completed form, thus concentrating efforts which have been necessarily disjointed through the want of an organization strong enough, and of sufficient public spirit to do the work in one institution.

By this action the State of Pennsylvania and city of Philadelphia would benefit, not only from the experience of the old countries, but by that which we have had in Massachusetts during the last decade, free from the difficulties peculiar to a pioneer cause, and from hinderances which have been local or exceptional, and, in my opinion, under circumstances more favorable to success than at present exist here or elsewhere.

One feature of this scheme in all its grades may require some explanation, and deserves it.

There is, running through the whole scheme, a definite proportion of scientific work and practice, not common in the curriculum of an art school, and usually, in its higher phases, pursued only in technical or science schools.

This is a radical feature in the scheme, essential from the first lesson in the lowest school to the last in the highest school.

In art study, as in every study worthy of the attention of intelligent persons, there must be no hap-hazard or rule-of-thumb processes, taught like tricks, and caught like fevers, by sleight of hand or insensibly, — a favorite mode with those who assume to be geniuses themselves, and require inspiration in their pupils, contenting themselves with vague generalizations concerning the sentiment of art, whilst they are running away from its truths, as well as from Nature's exact and scientific methods.

There can be no compromise in this matter, and it can no longer be winked at. Art is based on Nature; and Nature is either very scientific, or she is not so.

Science means the human discovery of Nature's laws; and, in expressing the phenomena of the physical world as the vehicle of perception or originality, the draughtsman must abide by scientific truths, to do which he must have a scientific education, or, in ignoring them and flying to the easier specific of relying on his feeling only, he will only be caricaturing Nature whilst professing to expound her beauties.

In support of this, I direct your attention to the fact that the greatest artists have been the most scientific men in their profession; and the names and attainments of Albert Dürer, Michael Angelo, and Leonardo da Vinci will bear out this statement. This is not accident, for the converse holds good; and the men most ignorant of the scientific basis of art display this ignorance in their works, and, through it, have been invariably unsuccessful, — small artists, with only ephemeral reputations when they had any.

Yet it is pitiful to hear some men of the present day, who have picked up a vagrant education by imitating others or by rule-of-thumb processes in art, denounce this scientific basis in art education as being mechanical and injurious.

Now scientific truth, in form and light and shade, is a necessary element in good art; yet, if we try the pictures of some people who denounce the scientific method, by the simplest laws of orthographic grammar, it will be found that they shrink away from their aspirations to be considered poetical and artistic interpretations of Nature, into vulgar outrages of her simplest truths, distortion of her sentiments, because wrong translations of her language; and, every detail being a little wrong, the whole work becomes a mosaic of lies, which we are modestly asked to believe produce the general effect of a great truth.

Even moderately intelligent persons cannot much longer accept such a monstrous doctrine as that, though it is generally by those who are most guilty of scientific outrages in art that any scheme of art education having a scientific element in it is most denounced.

I warn you, therefore, that if you recognize the principle which is the very spinal column of my scheme, — viz., that art is based on science and law, and that neither artists, teachers, nor designers can be produced, except through a scientific education, — you will take your stand on the ground which gave us a Michael Angelo, and you will be mercilessly criticised by every half-educated artist.

This principle, true of education for fine art, is even more obviously true of industrial art education, — which, to be practical, should be complete in its resources, and ignore no element necessary to perfect work, whether it come from the accuracy of scientific truth, or the beauty of artistic interpretation; for, though either may be but half the story, the absence of either destroys the completeness of the whole.

Industrial drawing, to be trustworthy and comprehensive, must be, therefore, both scientific and artistic; for the draughtsman or artist who is ignorant of graphic science is incapable of telling the truth, and, inartistic, must be devoid of grace in his works.

For the same reason every course of instruction in drawing must include instrumental practice, through which alone scientific truth is approachable, and also those branches of freehand drawing and design in which mechanical implements are helpless; subjects too subtle for simple formula, or too evanescent in effect to be interpreted by rule or scale, requiring no human implements for their expression but the man himself. I am aware this comprehensiveness of method is not easy either for teachers or the taught, and that there are sweeter and more unctuous modes of art study than that which I advocate.

There was also, once upon a time, a prophet, who said to his royal master, "Go up to Ramoth-Gilead and prevail;" and he, the king, went.

Remembering the sequel, I cannot advise you to go by the way of the Ramoth-Gilead route of ease and sweetness to prevail in the campaign of art education.

CONCLUSION.

I base all my anticipations of a general improvement in national taste and development of skilled labor upon the provision of sound teaching in all grades of public schools of the elements of art and science.

To secure this, a Normal art school, such as is here proposed, is the only possible agent; and it has therefore been the one which has been employed in the most artistic countries by the most progressive nations.

The teaching of specialties to adults for the purpose of remedying present deficiencies in taste and skill, is patchwork, and remedial only. The teaching of the principles and the language of art and science to all persons, is radical and preventive, — dyeing in the wool, not surface-staining of the garment.

An art school for the teaching of a score or a few scores of young men and women, more or less, in one place, even though that place be where the Declaration of Independence was first proclaimed, will never seriously influence public taste or skill, — for industrial art is wide-spread, and the country is not small, — unless successive generations of those young men and women are prepared to devote themselves, if need be, to the education of others over all these broad lands.

For this reason I claim that the action most beneficial to the public which can be taken by your institution, is to offer so thorough a training in art and its principles to all, that your graduates shall be qualified thereby for all art work, whether industrial or scholastic, that may fall in their way, or which they are fitted for by nature and character.

Whether this can be secured by the out-working of the scheme I have proposed, is for you to determine; but that the programme is practical has been proved by successful experience.

Trial may improve the scheme if it be a good one; but speculation and theorizing will neither test it nor improve upon it.

If it be regarded as an experiment, I should say that unless we experiment we shall make no discoveries, and mistakes even are only stages in progress; for the proof of advancement is that we can see by the light of the present where we have been ignorant, wrong, or successful in the past, and are prepared to profit by it.

The most cautious must sometimes take risks, or selfishly place all risks on other people; and the man who declines to venture into the water until he knows how to swim, will inevitably be drowned should he fall into it and be out of his depth.

I submit this scheme to you, then, with some degree of modest confidence, if I have understood your commission to me, — not because of its venerable antiquity, nor as being wholly new, nor claiming for it more originality than that of being an association of the successful experiences of many countries, which have been tested here upon this soil by myself.

I believe in it, and should rejoice to see it carried out on the scale available to you.

Leonardo da Vinci thus counsels us: —

> "If what thou wouldst thou canst not, then content thee
> To will as thou mayst act. It is but folly
> To will what cannot be. Soon learns the wise
> To wrest his will from bootless wishes free.
>
> "Our bliss and woe depend alike on knowledge
> Of what we should do, and, that known, to do it;
> But he alone shall compass this who never
> Doth warp his will when Right before him stands"

This, then, is my reply to your question, — "The Pennsylvania Museum and School of Industrial Art, Philadelphia: How can this institution best promote the cause of popular industrial art education?"

By this means, and unto these ends.

WALTER SMITH.

BOSTON PUBLIC LIBRARY

APPENDIX.

APPENDIX A.

THE ENGLISH PROGRAMME OF NORMAL ART SCHOOL STUDIES.

THE NATIONAL ART TRAINING SCHOOL, SOUTH KENSINGTON, LONDON, ENGLAND, ESTABLISHED IN 1852.

(*Extract from the Government Official Directory, 1881.*)

1. The National Art Training School at South Kensington is established for the purpose of training art masters and mistresses for the United Kingdom, and for the instruction of students in drawing, designing, and modelling to be applied to the requirements of trade and manufactures.

2. The course of instruction is as follows (it should be understood that it is not progressive in the order in which the stages are named) : —

Stage 1. — *Linear Drawing by Aid of Instruments.*

a. Linear geometry.
b. Mechanical and machine drawing, and details of architecture from copies.
c. Linear perspective.

Stage 2. — *Freehand Outline Drawing of Rigid Forms from Examples or Copies.*

a. Objects.
b. Ornament.

Stage. 3 — *Freehand Outline Drawing from the "Round."*

a. Models and objects.
b. Ornament.

Stage. 4. — *Shading from Flat Examples or Copies.*

a. Models and objects.
b. Ornament.

Stage 5. — *Shading from the "Round" or Solid Forms.*

a. Models and objects.
b. Ornament.
c. Time sketching, and sketching from memory.

STAGE 6. — *Drawing the Human Figure and Animal Forms from Copies.*

a. In outline.
b. Shaded.

STAGE 7. — *Drawing Flowers, Foliage, and Objects of Natural History from Flat Examples or Copies.*

a. In outline.
b. Shaded.

STAGE 8. — *Drawing the Human Figure or Animal Forms from the "Round" or Nature.*

a. In outline from casts.
b 1. Shaded (details).
b 2. Shaded (whole figures).
c. Studies of the human figure from nude model.
d. Studies of the human figure, draped.
e. Time sketching, and sketching from memory.

STAGE 9. — *Anatomical Studies.*

a. Of the human figure.
b. Of animal forms.
c. Of either, modelled.

STAGE 10. — *Drawing Flowers, Foliage, Landscape Details, and Objects of Natural History from Nature.*

a. In outline.
b. Shaded.

STAGE 11. — *Painting Ornament from the "Flat" or Copies.*

a. In monochrome, } either in water-color, tempera, or oil.
b. In colors, }

STAGE 12. — *Painting Ornament from the Cast, etc.*

a. In monochrome, either in water-color, tempera, or oil.

STAGE 13. — *Painting (General) from Flat Examples or Copies, Flowers, Still Life, etc.*

a. Flowers or natural objects in water-color, in oil, or in tempera.
b. Landscapes.

STAGE 14. — *Painting (General) direct from Nature.*

a. Flowers, or still life, in water-color, oil, or tempera, *without backgrounds.*
b. Landscapes.

STAGE 15. — *Painting Groups as Compositions of Color.*

a. In water-color, oil, or tempera.

STAGE 16. — *Painting the Human Figure or Animals in Monochrome from Casts.*

a. In oil, water-color, or tempera.

STAGE 17. — *Painting the Human Figure or Animals in Color.*

a. From the flat or copies.
b. From nature, nude or draped.
c. Time sketches and compositions.

STAGE 18. — *Modelling Ornament.*

a. Elementary, from casts.
b. Advanced, from casts.
c. From drawings.
d. Time sketches from examples and from memory.

STAGE 19. — *Modelling the Human Figure or Animals.*

a. Elementary, from casts of hands, feet, masks, etc.
b. Advanced, from casts or solid examples.
c. From drawings.
d. From nature, nude or draped.

STAGE 20. — *Modelling Fruits, Fowers, Foliage, and Objects of Natural History from Nature.*

STAGE 21. — *Time Sketches in Clay of the Human Figure or Animals from Nature.*

STAGE 22. — *Elementary Design.*

a. Studies treating natural objects ornamentally.
b. Ornamental arrangements to fill given spaces in monochrome.
c. Ornamental arrangements to fill given spaces in color.
d. Studies of historic styles of ornament, drawn or modelled.

STAGE 23. — *Applied Designs, Technical or Miscellaneous Studies.*

a. Machine and mechanical drawing, plan-drawing, mapping, and surveys, done from actual measurement.
b. Architectural design.
c. Surface design.
d. Plastic design.

CERTIFICATES.

3. The twenty-three stages of instruction are divided into six groups.

Certificates of competency to teach the subjects included in each group are given to candidates who pass the necessary examinations.

These are called certificates of the third grade.

The following are the groups which form the subjects of certificates: —

GROUP 1. — *Elementary Drawing and Coloring.* Stages 1, 2, 3, 4, 5, 6, 7, 10, and 13.

GROUP 2. — *Painting*, with examination in styles of art, and in the elementary principles of ornament. Stages 11, 12, 14, 15, and 22.

Group 3. — *The Figure drawn and painted,* with examination in the historic styles of ornament. Stages 8, 9, 16, and 17.

Group 4. — *Modelling Ornament,* with examination in styles of art, and in the elementary principles of ornament. Stages 18, 20, 22.

Group 5. — *Modelling the Figure,* with examination in the historic styles of ornament. Stages 8, 9, 19, 21.

Group 6. — *Technical Instruction.*

The examinations of the third grade will take place annually at the offices of the department, South Kensington, in the month of February.

Candidates who are desirous of passing such examinations must forward their names, together with all the requisite works, to the secretary of the department, on the first Saturday in February. They must state the group or groups for which they seek to obtain certificates. These works, if accepted, will be retained by the department. Works of unsuccessful candidates, and candidates not proposing to earn payments from the State, will be returned. They will be informed whether their drawings have been accepted, and whether permission can be granted to them to present themselves for examination.

These examinations will take place before the inspector-general for art, assisted by other examiners who may be associated with him. They will be conducted partly by written exercises, and partly by studies made in a given time. Each candidate may be required to teach a class in the presence of the examiner.

FIRST GROUP.

CANDIDATES FOR CERTIFICATES FOR THE FIRST GROUP.

1. If they have attended the training school of the department at South Kensington, they must have obtained a recommendation for admission to examination from the head master.

Candidates from the provincial or other schools will be required to execute an extra work in the presence of the examiner.

2. They must be prepared to instruct a class in the presence of the examiners either in freehand drawing, geometrical drawing, perspective, or model-drawing.

3. To sketch in a given time a group of models placed by the examiners for that purpose.

4. To solve, in writing, questions on geometry, perspective, orthographic projection, and the rudiments of constructive architecture. For the first group the following works are necessary, ten in number: —

Stage 1, a. — A sheet of gometrical problems.
Stage 1, b. — A sheet of mechanical drawings.
Stage 1, c. — A sheet of perspective diagrams.
Stage 1, d. — A sheet of architectural details.
Stage 3. — An outline from the Madeleine.
Stage 5, a. — A sheet of drawings, from plaster models, shaded in chalk or pencil.
Stage 5, b. — A sheet of ornament shaded, from the cast, in chalk.
Stage 6. — An outline of the figure from the flat.
Stage 10. — A sheet of foliage drawn from nature.
Stage 13. — A sheet of flowers painted from the flat.

SECOND GROUP.

For the second group each candidate —

1. Must already have obtained certificate for the first group.

2. Will be required to sketch in color, in a given time, a group placed by the examiner for that purpose, using any medium or vehicle which the examiners may propose.

3. Will be required to answer, in writing, a paper of technical questions on art, and on the general principles and execution of the several historic schools, and a paper of questions on the nomenclature of structural botany.

For the second group the following works are required, six in number: —

Stage 13 or *14.* — A landscape in oil from nature or some approved example.
Stage 12. — A painting of ornament in monochrome, from the cast, in oil or tempera.
Stage 14. — A study of flowers painted from nature in water-color.
Stage 15. — A study of a group as a composition of color in oil.
Stage 22, c. — A sheet of at least two studies of ornamental arrangments in color.
Stage 22, a. — A sheet of studies of some plant or plants botanically analyzed with a view to ornamental details.
Stage 22, d. — A set of studies executed during the period of training, from some one class of objects in the South Kensington Museum, sufficiently extensive to represent the history of the class selected.

THIRD GROUP.

For the third group each candidate —

1. Must already have obtained certificates for the first and second groups.

2. Will be required to answer, in writing, a paper of questions on the anatomy of the human figure.

3. To answer, in writing, a paper on the history of ornament of the various periods and styles, and a paper of questions on the elementary principles of ornament, and on the history and peculiarities of the ornamentation of the class chosen for illustration in the drawings sent up in Stage 22, *d*.

4. To draw in a given time the bones or muscles within the outline of an antique figure from memory.

5. The living model will be posed for a time study by each candidate.[1]

For the third group the following works are necessary, seven in number: —

Stage 8, b. — An antique figure shaded, from the cast, in chalk.

Stage 8, c. — A study in chalk from the living model.

Stage 9. — The bones and muscles placed within outlines of an antique figure.

Stage 16. — A painting of the human figure, from a picture, in oil.

Stage 17. — A painting of the nude or draped figure, from the life, in oil.

Stage 22, d. — Varied studies of historic styles of ornament, sufficiently extensive to represent the history of the classes selected, sketched from works in the museum, the authority in each case being appended. If they are from colored ornament, the sketches are to be colored also.

FOURTH GROUP.

For the fourth group each candidate —

1. Must already have obtained a certificate for the first group.

2. Will be required to answer, in writing, a paper of questions on the elementary principles of ornament, and on the history and peculiarities of the ornamentation of the class chosen for illustration in the drawings sent up in Stage 22, *d.*

3. To sketch from memory elementary details of ornament, and in a given time to model a piece of ornament, in low relief, from a print or drawing.

For the fourth group the following works are required, five in number: —

Stage 18, a. — A modelled study of ornament from the cast.

Stage 18, b. — A modelled study of ornament from a drawing.

Stage 20. — A modelled study of flowers or foliage from nature.

Stage 22. — A modelled study of any one of the sections of this stage.

Stage 22, a. — A sheet of studies of some plant or plants, botanically analyzed with a view to display their ornamental details, drawn or modelled.

Stage 22, d. — A set of studies executed during the period of training, from some one class of objects in the South Kensington Museum, sufficiently extensive to represent the history of the class selected.

FIFTH GROUP.

For the fifth group each candidate —

1. Must already have obtained a certificate for the first and fourth groups.

2. Will be required to answer, in writing, a paper of questions on the anatomy of the human frame.

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[1] From candidates who are or have been students of the Royal Academy, and have been there admitted to study from the living model, this last exercise will not be required.

3. To answer, in writing, a paper on the history of ornament of the various periods and styles.

4. To make in a given time a sketch, in low relief, from a print or drawing of an antique figure, and to give the anatomical details from memory.

5. The living model will be posed for a time study by each candidate.[1]

For the fifth group the following works are required, six in number: —

Stage 8. — An antique figure shaded from the cast.

Stage 9. — An anatomical rendering of an antique figure modelled.

Stage 9, a. — A drawing of the skeleton placed within the outline of an antique figure.

Stage 19. — A model of an antique figure in the round, rendered in relief.

Stage 20. — A model of the human figure from nature, nude or draped.

Stage 22, d. — Varied studies of the relief ornament of historic styles sketched from the casts, carvings, metal-work, etc., in the museum of the department with written authorities for each, and sufficiently extensive to represent the history of the various classes selected.

SIXTH GROUP.

1. Certificates in the sixth group are granted on proof of competency to teach (*a*) domestic architectural drawing, and (*b*) the special application of ornament to plastic and surface decoration for various fabrics, manufactures, and architectural purposes.

2. The candidate for a certificate for architectural drawing must have already passed in Group 1; must send in a tinted drawing from measurement of some architectural subject, and a design with plans and sections for permission to compete. He will have to answer a paper on the details of architectural construction, and on the characteristics of the architectural ornament of various historic styles and periods; and to make a design from specifications of some architectural subject in the presence of the examiner.

3. Candidates for a special certificate on ornament, who have been educated in the training school, must have previously taken certificates for Groups 1, 2, and 3, or 1, 4, and 5. They will be required to send in, for permission to compete, two original works painted or modelled, in order to show their technical skill as well as their power of designing; also a monograph, drawn up by themselves, of at least two historic styles illustrated by sketches from works or drawings in the museum. They will be examined by papers on the elements, history, and application of ornament, and will be required to design some work in the presence of the examiners.

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[1] From candidates who are or have been students of the Royal Academy, and there admitted to study from the living model, this last exercise will not be required.

4. The character of the examinations in this group for special certificates of technical knowledge will be determined by the nature of the applications for examination; and the conditions will be declared according to the circumstances of the case.

APPENDIX B.

PLAN AND PROGRAMME OF STUDIES

IN THE MASSACHUSETTS STATE NORMAL ART SCHOOL, BOSTON, U.S., ESTABLISHED IN 1873.

DESIGNED AND ARRANGED BY WALTER SMITH, PRINCIPAL.

(*Extract from the Official Circular, 1881.*)

The certificates issued by the school are of four grades, — viz., fourth, third, second, and first, — representing four degrees of attainment, and the four grades of schools; viz., —

1. Certificate for teaching in primary and intermediate schools.
2. Certificate for teaching in grammar schools.
3. Certificate for teaching in high and normal schools.
4. Certificate for teaching in art and technical schools.

The fourth grade is given for passing in Classes A, B, C, or D, and marks the qualification to give instruction in art and science schools as special teachers of drawing, and for instructors of evening drawing schools. The diploma is given when all four certificates have been taken.

The third grade is given for passing an examination and producing a set of works which qualify the student for high and normal school instruction.

The second grade is given for passing the examination in the subjects for the grammar-school course.

The first grade is that required for teachers of the primary and intermediate schools.

The higher certificate includes the lower. Thus a third grade certificate comprises those of the second and first grades, and a fourth grade includes the three below it.

CERTIFICATES OF THE FIRST GRADE.

FOR TEACHERS OF PRIMARY AND INTERMEDIATE SCHOOLS.

LIST OF CERTIFICATE DRAWINGS FOR PERMISSION TO BE EXAMINED.

INSTRUMENTAL DRAWING.

1. A sheet of geometrical definitions, plane and solid.
2. A sheet of blackboard and dictation exercises and elementary designs.

FREEHAND DRAWING.

3. A sheet of freehand, outline ornament, from copy.
4. A sheet of model-drawing from solid.
5. A sheet of illustrations for a course of primary-school exercises for teaching drawing.
6. A sheet of botanical analysis and historic ornament.

EXAMINATION FOR CERTIFICATE.

The above drawings having been submitted and approved, time examinations for the completion of the certificate will be held at the end of the annual session as follows: —

1. Freehand drawing, in outline, from copy.
2. Freehand drawing from objects.
3. Memory drawing of an original design.
4. Dictation drawing.
5. Geometrical drawing.
6. Historical ornament.

Thirty minutes given for each subject.

CRRTIFICATES OF THE SECOND GRADE.

FOR TEACHERS OF GRAMMAR SCHOOLS.

LIST OF CERTIFICATE DRAWINGS FOR PERMISSION TO BE EXAMINED.

INSTRUMENTAL DRAWING.

1. A sheet of geometrical problems.
2. A sheet of perspective problems, parallel and angular.
3. A sheet of blackboard and dictation exercises, and two elementary designs.

FREEHAND DRAWING.

4. A sheet of model-drawing, in outline, from solid.
5. A sheet of freehand, outline of ornament, from copy.
6. A sheet of botanical analysis of a plant.
7. A sheet of historical ornament in outline.
8. A sheet of two applied designs for flat surfaces.
9. A sheet of illustrations for teaching drawing in grammar schools.

EXAMINATION FOR CERTIFICATE.

The above drawings having been submitted and approved, time examinations for the completion of the certificate will be held at the end of the annual session as follows: —

1. Freehand drawing, in outline, from copy.
2. Freehand drawing from objects.
3. Memory drawings of an original design.
4. Geometrical drawing.
5. Perspective drawing.
6. Historical ornament.

Forty-five minutes given for each subject.

CERTIFICATES OF THE THIRD GRADE.

FOR TEACHERS OF HIGH AND NORMAL SCHOOLS.

LIST OF CERTIFICATE DRAWINGS REQUIRED FOR PERMISSION TO BE EXAMINED.

INSTRUMENTAL DRAWING.

1. A sheet of geometrical problems.
2. A sheet of perspective, including parallel, angular, and oblique problems.
3. A sheet of machine-drawing from copies or lectures.
5. A sheet of building construction from copies or lectures.

FREEHAND DRAWING.

5. A sheet of model-drawing, in outline, from the object
6. A sheet of two model-drawings in crayon or pencil, shaded, from the copy and object.
7. A sheet of two model-drawings in stump, shaded, from the copy and object.
8. A sheet of two model-drawings, with the brush, from the copy and object.
9. A sheet of two outline drawings from natural foliage and common objects.
10. A sheet of design, one elementary and one applied.
11. A sheet of botanical analysis of a plant, applied in design.
12. A sheet of analysis of three styles of historic ornament.

EXAMINATION FOR CERTIFICATE.

The above drawings having been submitted and approved, time examinations for the completion of the certificate will be held at the end of the annual session as follows :—

1. Perspective practice. One hour.
2. Perspective theory. One hour.
3. Model-drawing, shaded from solid. One hour.
4. Harmony of color. One hour.
2. Memory drawing. One hour.
6. Historical ornament. One hour.
7. Machine-drawing. One hour.
8. Building construction. One hour.

FOR CLASS A. CERTIFICATE A. FOURTH GRADE.

ELEMENTARY DRAWING.

Days.	*Hours.*	*Subjects of Instruction.*
Monday	9 to 1	Certificate works.
	2 to 4	Geometry,— orthographic projection.
Tuesday	9 to 1	Certificate works.
	2 to 4	Perspective.
Wednesday	9 to 1	Certificate works.
	2 to 4	Model-drawing, first term. Historic ornament and color, second term.
Thursday	9 to 1	Certificate works.
	2 to 4	Building construction.
Friday	9 to 11	Machine-drawing.
	11 to 1	Isometric projection and shadows.
	2 to 4	Normal exercises.

TIME SKETCHES AND TEST EXAMINATIONS.

Unless an average of fifty per cent of marks in each subject is obtained, the student will be ineligible for the certificate examination. The records of these examinations will be kept, and along with the results of the certificate examinations be open to those who are consulting the records to see the standing of each student when making inquiries for teachers.

LIST OF CERTIFICATE DRAWINGS.

TO BE DONE DURING THE COURSE OF STUDY, AND HANDED IN FOR PERMISSION TO BE EXAMINED.

INSTRUMENTAL DRAWING.

1. A sheet of geometrical problems.
2. A sheet of perspective problems.
3. A sheet of orthographic projection.
4. A sheet of machine-drawing.
5. A sheet of details of building construction.
6. A sheet of isometric projection.
7. A sheet of projection of shadows.

FREEHAND DRAWING.

8. A sheet of model-drawing in pencil outline.
9. A sheet of model-drawing, shaded in chalk.
10. A sheet of model-drawing, shaded in sepia, India ink, or neutral tint.
11. A sheet of model-drawing, rubbed or stumped.
12. An outline drawing of ornament, from the cast, in pencil.
13. An outline drawing of foliage from nature.
14. An outline drawing of the human figure from the flat.
15. An outline drawing of animal form from the cast.
16. An outline drawing of a piece of furniture, chair, table, etc.
17. A shaded drawing, in chalk, with point or stump, of ornament, from the cast.
18. A shaded drawing, in sepia or India ink, from the cast.
19. An original design, to fill a geometric form, from a plant.
20. A design for one of the six subjects given below.
21. Specimen lessons in blackboard drawing and dictation drawing.
22. A painting, in water-color, of a flower, from copy.
23. Analyses of styles of historic ornament.
24. Botanical analysis of a plant, for the purpose of design, and four designs from it.

DESIGN FOR FLAT SURFACE.

1. Design for encaustic tile.
2. Design for a book-cover.
3. Design for a cotton print.
4. Design for an oil-cloth.
5. Design for a wall-paper.
6. Design for lace.

The elementary design is to be made during the first, and the applied design during the second, term.

EXAMINATION FOR CERTIFICATE.

The above drawings having been submitted and approved, time examinations for the completion of the certificate will be held at the end of the annual session in the following subjects: —

1. Plane geometrical drawing.
2. Perspective practice.
3. Perspective theory.
4. Orthographic projection.
5. Machine-drawing.
6. Isometric projection and projection of shadows.
7. Building construction.
8. Model-drawing from solid.
9. Drawing from memory.
10. Drawing from dictation.
11. Historical ornament.
12. Harmony of color.

FOR CLASS B. CERTIFICATE B. FOURTH GRADE.

FORM, COLOR, AND INDUSTRIAL DESIGN.

Days.	*Hours.*	*Subjects of Instruction.*
Monday	9 to 1	Painting. Certificate works.
	2 to 4	Lecture. Perspective.
Tuesday	9 to 1	Painting. Certificate works.
	2 to 4	Charcoal time sketch. Figure. Water-color time sketch. Figure.
Wednesday	9 to 1	Painting. Certificate works.
	2 to 4	Time sketch in oil.
Thursday	9 to 11	Painting. Certificate works.
	11 to 1	Time sketch in water-color.
	2 to 4	Anatomy.
Friday	9 to 1	Painting. Certificate works.
	2 to 4	Lecture. Historic schools. Applied design.

The three time sketches made each week are to be submitted to the principal every Friday, and will be marked by him. Unless an average of fifty per cent of marks per week for twenty-five weeks is obtained, the student will be ineligible for the final examination for certificate. The records of these examinations will be kept, and, along with the results of the certificate examinations, be open to those who are consulting the records to see the standing of each student when making inquiries for teachers.

PAINTING. — LIST OF CERTIFICATE WORK.

TO BE DONE DURING THE COURSE OF STUDY, AND HANDED IN FOR PERMISSION TO BE EXAMINED.

PAINTING IN WATER-COLORS.

1. Flower and foliage from nature, without background.
2. Fruit and still life from nature, with background.
3. Landscape-painting from an approved example.
4. Head from nature.

DRAWINGS.

5. Monochrome study of antique figure from cast.
6. Skeleton of same.
7. Muscles of same.
8. Study from the living model.
9. Perspective. Shadows, reflections, and aërial, — three examples on one sheet.

PAINTING IN TEMPERA.

10. Study of ornament or arabesque, in color, from copy.

PAINTING IN OIL.

11. Study in monochrome from cast of human figure.
12. Group, as a study of composition and color, of objects or still life.

DESIGN IN COLOR. SURFACE DECORATION.

1. Design for a breakfast or dinner service.
2. Design for a tablė-cloth or window-curtain.
3. Design for a wall or ceiling decoration, fresco or paper-hanging.
4. Design for a lace curtain.
5. Design for a carpet or drugget.
6. Design for a certificate or diploma.

The student is to produce two designs selected from the above list, one of which will be retained by the school, in addition to one certificate work. One design is to be executed in each term.

All certificate works to be on imperial sheets or canvas.

EXAMINATION FOR CERTIFICATE.

PRACTICE.

1. Time sketch, in oil, of a group, objects, and still life. Four hours.
2. Time sketch, in water-colors, of a head from living model. Four hours. The same of a group. Four hours.
3. Time sketch, in light and shade, of a cast of ornament. Three hours.

THEORY.

4. Paper on the harmony of color, illustrated by sketches. Three hours.
5. Paper on the origin and chemistry of colors, and on the technical terms used in painting. One hour.
6. Paper on the application of surface ornament to industrial purposes. Two hours.
7. Paper on the principles and styles of the historic schools of painting. Two hours.
8. Anatomy: drawing of the bones and muscles. Four hours.
9. Perspective, aërial, shadows and reflections. Three hours.
10. Description of lithography, wood-engraving, etching, steel-engraving, porcelain-painting, lace-making by hand and machine, fresco-painting, mosaic work in glass and stone, inlays, glass staining and painting, encaustic tile, stencilling, Palissy ware, Majolica, Della Robbia ware, Wedgewood ware. Four hours.

FOR CLASS C. CERTIFICATE C. FOURTH GRADE.

THE CONSTRUCTIVE ARTS.

ARCHITECTURAL DESIGN. — MACHINE-DRAWING, CONSTRUCTION, AND DESIGN. — DESCRIPTIVE GEOMETRY. — TOPOGRAPHICAL DRAWING AND SHIP-DRAUGHTING.

Days.	*Hours.*	*Subjects of Instruction.*
Monday	9 t0 4	Class-work. Building construction.
Tuesday	9 to 1	Lecture. Descriptive geometry. Topographical drawing and ship-draughting.
	2 to 4	Class-work.
Wednesday	9 to 4	Class-work.
Thursday	9 to 1	Lecture. Machine-drawing, etc.
	2 to 4	Class-work.
Friday	9 to 1	Lecture. Building construction.
	2 to 4	Lecture. Architectural design.

Test examinations will be held on the first Monday in each month. Unless an average of fifty per cent of marks is obtained in each subject, the student will be ineligible for the certificate examination. The records of these examinations will be kept, and, along with the results of the certificate examinations, be open to those who are consulting the records to see the standing of each student when making inquiries for teachers.

LIST OF CERTIFICATE WORKS.

TO BE EXECUTED DURING THE COURSE OF STUDY, AND HANDED IN FOR PERMISSION TO BE EXAMINED.

[All drawings to be on imperial paper, 29½ by 21½ inches.]

ARCHITECTURAL DESIGN AND BUILDING CONSTRUCTION.

1. Design for a house or public building, showing plans, elevations, sections, and perspective, on one sheet.
2. Structural details, on an enlarged scale, of floors, windows, roof, and staircase, of the first subject.
3. Monograph of the three ancient or three mediæval or three modern styles of architecture and ornament.
4. Drawing of a building to scale from actual measurement of the structure; plans and two geometric elevations.

MACHINE-DRAWING, CONSTRUCTION, AND DESIGN.

5. Sheet of screws, plans, and elevations.
6. Sheet of wheels, spur, bevel, cams, eccentrics, gearing.
7. Plan, elevation, and section of a locomotive or stationary engine, from copy.
8. Drawing from the actual object, as a drill, pump, or any other machine. Two views.

DESCRIPTIVE GEOMETRY AND TOPOGRAPHICAL DRAWING.

9. Sheet of illustrations, in outline, from lectures on descriptive geometry. Development of surfaces.
10. Sheet of intersections of solids and projection of shadows, tinted.
11. Ship-draughting. Two views and section of a boat or ship.
12. Topographical drawing of an estate from actual survey, or from data given; colored, and buildings sketched in outline.

DESIGNS FOR ORNAMENTATION OF BUILDINGS.

1. Design for sculptured ornament in stone or marble, or enriched moulding or frieze.
2. Design for an encaustic-tile pavement for hall or passage.
3. Design for an open fireplace or mantle, using tiles.
4. Design for a stained-glass window.
5. Design for a cresting for a roof in metal or terra-cotta.
6. Design for a mosaic panel, or inlay, or marquetrie.

The student is to produce three designs selected from the above list, one of which will be retained by the school, in addition to one certificate work. Two designs are to be executed during the first term, and one during the second. They are to be on imperial sheets.

EXAMINATION FOR CERTIFICATE.

ARCHITECTURAL DESIGN.

1. Paper on the styles of architecture and ornament illustrated in the monograph. Four hours.
2. Paper on building construction in the several materials used. Three hours.
3. Design for a building in the style employed for the certificate work, complying with given conditions. Sketches required. Six hours.
4. Design for details of ornament. Three hours.

MACHINE-DRAWING.

5. Paper on details of machinery. Six hours.
6. Drawing from an actual machine to scale, placed in the examination-room. Six hours.

TOPOGRAPHY, DESCRIPTIVE GEOMETRY, AND SHIP-DRAUGHTING.

7. Paper on solid geometry. Six hours.
8. Survey of an estate. Six hours.
9. Drawing from memory of the ship-draughting certificate work. Six hours.

FOR CLASS D. CERTIFICATE D. FOURTH GRADE.

SCULPTURE AND DESIGN IN THE ROUND,—MODELLING AND CASTING.

Days.	*Hours.*	*Subjects of Instruction.*
Monday	9 to 1	Modelling. Certificate works.
	2 to 4	Modelling. Time sketch in clay.
Tuesday	9 to 1	Modelling. Certificate works.
	2 to 4	Drawing. Time sketch in charcoal.
Wednesday	9 to 1	Modelling. Certificate works.
	2 to 4	Lecture. Applied design.
Thursday	9 to 1	Modelling. Certificate works.
	2 to 4	Anatomy. Time sketch in clay.
Friday	9 to 1	Casting.
	2 to 4	Casting.

The two time sketches made each week are to be submitted to the principal every Friday, and will be marked by him. Unless an average of fifty per cent of marks per week for twenty-five weeks is obtained, the student will be ineligible for the final examination for certificate. Time sketches on a flat surface to be of uniform half-imperial size, and, if in the round, to be fourteen inches in height. All to be signed and dated. The records of these examinations will be kept, and, along with the results of the certificate examinations, be open to those who are consulting the records to see the standing of each student when making inquiries for teachers.

LIST OF CERTIFICATE WORKS.

TO BE EXECUTED DURING THE COURSE OF STUDY, FOR PERMISSION TO BE EXAMINED.

[All works to be of imperial or half-imperial size, or to be in the round.]

ORNAMENT AND ANIMAL FORM.

1. Historical ornament in one style from the cast.
2. Study of ornament from flat copy.
3. A design for a capital, spandrel, panel, rosette, or enriched moulding, executed the full size, for stone, wood, iron, or terra-cotta.
4. Model of flowers or foliage, from nature, in relief, or statuette of an animal, or an animal in relief.

HUMAN FIGURE.

5. Portrait head from nature, life-size, in the round or relief.
6. Bas-relief from antique figure in the round.
7. Anatomical rendering of an antique figure.
8. Model in relief from a print or drawing of a human figure or head.
9. Bust, life-size, from the antique.
10. Study from the life, in relief or the round, of the whole figure.

CASTS.

11. Cast from nature of an arm, hand, foot, or mask.
12. Cast from nature of foliage, fruit, or flowers.
13. Casts from a piece-mould, sulphur-mould, and gelatine-mould, made by the student from his own models or selected works.

DESIGNS IN THE ROUND. DRAWINGS.

1. Design for a work in cast or wrought iron, as a grate, railing, etc.
2. Design for a piece of furniture in which wood-carving is employed.
3. Design for a sculptured ornament in stone, marble, or terra-cotta, or for a frieze.
4. Design for a centrepiece for a ceiling, to be made in plaster.
5. Design for a vase, pitcher, flagon, goblet, or tankard, in the precious metals.
6. Design for an enriched shaft of a column or a spandrel, introducing the human or animal figure.

The student is to produce four designs selected from the above list, one of which will be retained by the school as a specimen of the student's work, in addition to the cast model. Two designs are to be executed in each term on imperial sheets.

EXAMINATION FOR CERTIFICATE.

THEORY.

1. Paper on sculptured ornament of the historical schools. Three hours.
2. Paper on design applied to objects in the round; viz., plaster, terra-cotta,

wood-work (constructional and sculptured), metal (cast and wrought), stone, marble, etc. Three hours.

3. Paper on anatomy of the human skeleton and muscles. Four hours.

4. Paper on sculpture of the human figure. Three hours.

PRACTICE.

5. To sketch in clay a relief copy of a piece of ornament from the cast or shaded copy. Three hours. Cast of the same. Three hours.

6. To model a relief from the entire figure in the round. Four hours.

7. To model a bust or statuette from the antique or life or shaded copy. Four hours.

8. To make a charcoal sketch of a head from nature, life-size. Four hours.

NOTICE CONCERNING CERTIFICATE WORKS.

Four of the ten certificate models are to be of imperial size, or in the round; and one is to be cast by the student, and left in the school as a specimen.

The works are to be an example of bas-relief, of mezzo or mixed relief, alto-relief, or the round; one only of which (the selected work) will be required to be cast.

REGULATIONS OF THE SCHOOL.

The only works allowed to be executed in the school are those required by the lecturers or instructors to illustrate their lectures or lessons, or those on the list of certificate works, or time sketches.[1]

The certificate works must be made on half-imperial sheets of paper or canvas ($15 \times 21\frac{1}{2}$), except in Classes B, C, and D, which must be on imperial sheets, canvases, or grounds.

All materials and apparatus required are to be provided by the students at their own cost; no examples for instruction can be removed from the school by the students; and any damage done to the property of the school will have to be made good by the teacher in whose class it occurs, and who is authorized to recover the cost of damage from the student causing it.

The attendance of the students will be registered daily, and absence from the classes must be explained to the instructors.

At the class lectures the sketches and illustrations made or used by the lecturers or instructors are to be reproduced by each student, accompanied by such written descriptions as may be deemed necessary.

There will be a recess from one to two P.M., between the morning and afternoon sessions.

Each lecturer will require a certain amount of work to be done by the students between one lecture and another. This home-work must be regarded as a part of the school-work as much so as that done in the lecture-room or studio.

The text-books used or required for reference will be indicated by the lecturer on the several subjects. Any certificate work which, in the opinion of the principal, does not show sufficient skill to qualify the student to teach the subject, will be rejected, and another must be made.

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[1] Time sketches, and all works other than certificate works which may be of use in illustrating the courses of instruction pursued in the school, will be retained in it.

Every student will be provided with a locker, in which to keep boards and drawing materials. On receiving the key, the student must deposit one dollar as a guaranty that the key will be returned: when it is returned, the money will be repaid.

A student can be advanced from one class to another only on completion of the whole set of certificate works of the class he is in, and a student who passes any subject of examination cannot be re-examined in the same. A student can be a member of only one class during one session, unless permission be given by the principal.

APPENDIX C.

COURSE OF STUDY IN THE PENNSYLVANIA MUSEUM AND SCHOOL OF INDUSTRIAL ART, PHILADELPHIA, U. .,

ESTABLISHED IN 1877.

COURSE ARRANGED BY LESLIE W. MILLER, PRINCIPAL.

(*Extract from Circular of Committee on Instruction, 1881–82.*)

CIRCULAR OF THE COMMITTEE ON INSTRUCTION.
1881–82.

THE purpose of the school is to furnish such instruction in drawing, painting, and modelling, as is required by designers and workmen in the various constructive and decorative arts, and to serve as a training school for teachers of these branches.

COURSE OF STUDY.

The course of study embraces drawing and painting from models, casts, draperies, and still life; plain and descriptive geometry; projections, with their application to machine-drawing and to building construction; shadows, perspective; modelling and casting; historical ornament and original design. The instrumental drawing will be taught by means of class lessons or lectures; and lectures will also be given upon anatomy, structural botany, and historical ornament, upon which examinations for certificates will be based.

Students completing satisfactory exercises in the subjects enumerated in the following lists will be eligible for the examinations which will be held at the close of each school year, and on passing the examinations will receive certificates. There will be three certificates, — one to be awarded on the completion of the course in drawing, one for painting, and one for modelling; and those who have received the three certificates will be awarded the full diploma of the school.

Students who have received the drawing certificate may enter either the class in painting or the class in modelling, as they may elect. Special students who have not received the first certificate will be admitted to these classes if, in the judgment of the committee, they are properly qualified. Special terms are arranged for such instruction.

SCHOOL YEAR.

The school year of thirty-six weeks begins the second Monday in September. There is a vacation of one week at Christmas.

HOURS OF STUDY.

The rooms are open from 9 A.M. until 5 P.M. every day, except Saturdays, when they are closed at 2 o'clock. Attendance will be required only on four days in the week, and until 1 o'clock.

EVENING CLASS.

The evening class will be held on Monday, Wednesday, and Thursday evenings, from 7½ to 9½ o'clock.

TUITION FEES AND ENTRANCE.

Day class, per term of eighteen weeks, eighteen dollars, payable in advance.

Night class, per term of eighteen weeks, five dollars, payable in advance.

Students will not be admitted under fifteen years of age.

Students may enter the school at any time; but applicants will not be received for less than eighteen weeks, except by special permission of the committee.

MATERIALS FOR STUDY.

Instruments and materials for study must be provided by the students. A list of the articles required in each class is posted in the class-rooms. Paper of suitable size and quality may be had of the curator at cost price.

Every student will be provided with a receptacle, in which drawing boards and materials are to be placed before leaving the class-rooms. On receiving the key, the student must deposit fifty cents, which will be refunded when the key is returned.

Students will be furnished with facilities for working at the Museum in Memorial Hall when it is desired.

POST-GRADUATE COURSE.

Graduates from the regular course may continue in the school for advanced study, without payment of fees, on condition that they will devote a certain amount of time to teaching in the school.

CERTIFICATE WORKS.

To be eligible for the examinations for certificates students must have completed satisfactory exercises in each of the following subjects. The works are regarded strictly as exercises, not as results, and students will practise the several kinds of subject until the work required can be performed with facility in a reasonable time.

At least one specimen of each student's work in each class will be retained by the school.

DRAWING CLASS. CERTIFICATE A.

EXERCISES.

FREEHAND DRAWING.

Model-drawing in outline.
Model-drawing shaded with crayon point or with stump.
Drawing of ornament from casts in outline.
Drawing of ornament from casts, shaded with crayon or stump.
Drawing of pieces of furniture, chairs, tables, etc., in outline.
Drawing of animal forms, from casts, with crayon or stump.
Studies of drapery with crayon or stump.
Studies of foliage in pencil, or pen and ink.
Analysis of plants for the purpose of design.
Original designs, for given spaces, from plant forms.
Analysis of styles of historic ornament.
Design applied to surface decoration of any kind.

INSTRUMENTAL DRAWING.

Problems in plane geometry.
Problems in orthographic projection.
Problems in descriptive geometry (intersections and developments).
Problems in isometric projection.
Problems in projection of shadows.
Problems in perspective.
Details of machinery.
Details of building construction.

EXAMINATIONS.

Time examinations in the following subjects will be held at the close of each school year: —

Plane geometrical drawing.
Orthographic projection.
Descriptive geometry.
Isometric projection.
Projection of shadows.
Perspective.
Model-drawing.
Drawing from memory.
Historical ornament. A written paper, illustrated by drawings.

PAINTING CLASS. CERTIFICATE B.

EXERCISES.

IN OIL-COLORS.

Painting from casts.
Painting from drapery.
Painting from groups of still life.

IN WATER-COLORS.

Studies from models and casts in sepia or India ink.
Studies in color harmony.
Original designs, treated in different schemes of color.
Studies of flowers from nature.

TEMPERA.

Studies of surface ornament, fabrics, etc.
Original designs for painted, printed, and woven ornament.

(This includes lace and embroidery.)

EXAMINATIONS.

Time sketch in oil-colors of a group of objects.
Time sketch in water-colors of a group of objects.
Exercise in color harmony in water-color.
Paper on the origin and chemistry of pigments.
Paper on historical ornament.
Paper on principles of design in surface decoration.
Description of lithography, engraving and etching, porcelain and pottery decoration, lace-making, fresco-painting, mosaic work, inlays, colored glass work.

MODELLING CLASS. CERTIFICATE C.

EXERCISES.

IN CLAY.

Studies of ornament from casts.
Studies of details of human figure from casts.
Studies of animal form from casts.
Studies of ornament from prints and photographs.
Original designs for wood or stone carving.
Original designs for stucco-work.
Original designs for ornament in terra-cotta.
Original designs for vase decoration in terra-cotta.
Anatomical rendering of human figure from the antique.

DRAWINGS.

Designs for work in cast or wrought metal.
Designs for furniture with carved enrichments.

EXAMINATIONS.

Paper on historical schools of sculptured ornament.

Paper on principles of design, applied to sculptured objects.

Time sketch in clay of ornament, from cast or print.

Cast of the same.

Paper on anatomy of the human figure.

Paper on pottery and porcelain, and on the progress of the ceramic arts in the United States.

LECTURES.

Dr. W. W. Keen will deliver a course of ten lectures on the anatomy of animal forms as applied to decorative and industrial art, beginning on Saturday evening, the 5th of March, at 7.30 p.m. The course will include the following subjects: —

1. The general divisions of the animal kingdom, — the vertebrate skeleton.
2. The muscles.
3. The anatomy of expression in man and the lower animals.
4. The features in man and the lower animals.

5 and 6. On birds.

7. Fishes and reptiles.

8 and 9. Insects.

10. Crustacea, mollusks, and radiates.

Occasional lectures on structural botany, harmony of color, and related subjects, by the principal and others, will be given throughout the year.

Class instruction in the geometrical branches and in original design will be given by the principal every Monday, Wednesday, and Friday morning, from 11 to 12.30, and every Wednesday evening.

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